

APPENDIX A

Bubble Plots of Chemical Constituents in Quantico Creek Sediments

Figures A-1 through A-46 show 2-dimensional bubble plots for surface sediment data in Quantico Creek. In the bubble plots, the area of the bubble at a sampling location is directly proportional to the observed concentration of the constituent at that sampling location, with larger bubbles indicating larger concentrations. Bubbles are plotted for each detected concentration, while non-detects are plotted as points on the plots. The legend on the left of each figure provides the scale of the bubbles based on maximum concentrations of each constituent. The scale of concentration to bubble size is not consistent between analytes, since some analytes occur in much higher concentrations than others. The bubble plots for Quantico Creek illustrate data for site sampling locations as well as data for upstream reference locations. Site data are plotted as open bubbles while reference data are plotted as bubbles with a star in the center. The legend provides maximum, mean, and minimum concentrations for each constituent in site samples as well as in reference, or background samples. EPA Region 3 accepted ecological sediment screening benchmarks and human health RBCs are also presented for reference purposes.

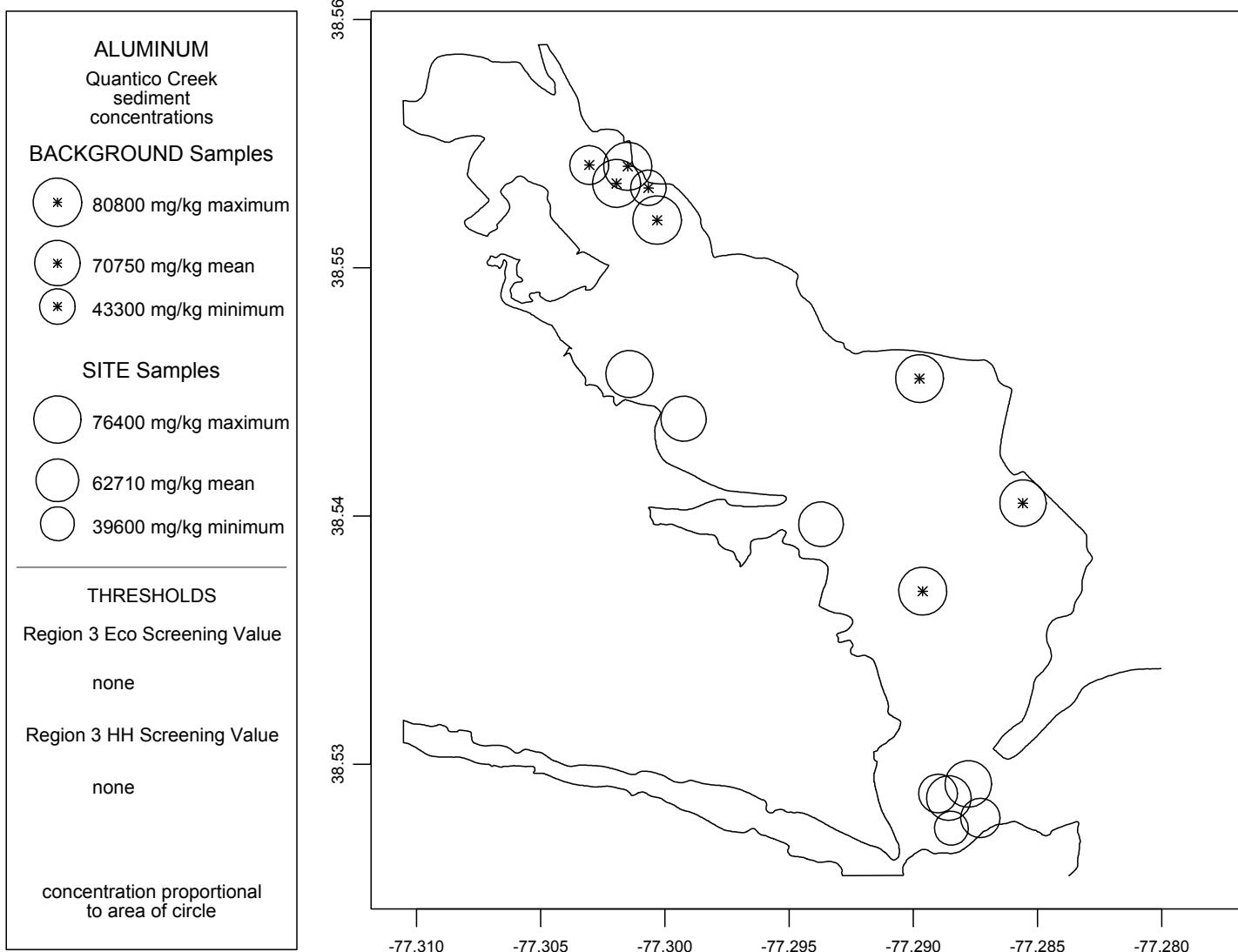


Figure A-1. Bubble Plot of Aluminum Concentrations in Quantico Creek Sediments.

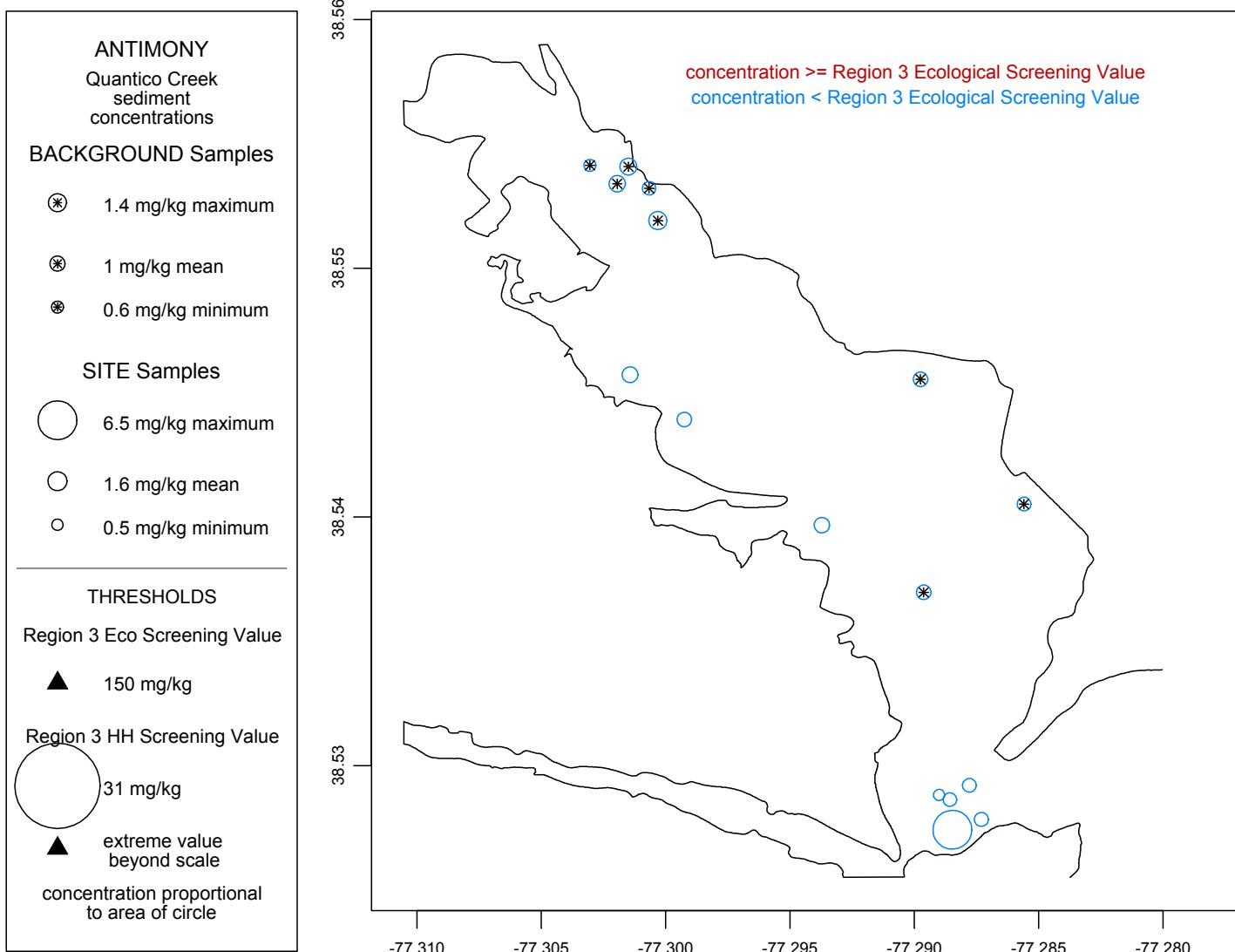


Figure A-2. Bubble Plot of Antimony Concentrations in Quantico Creek Sediments.

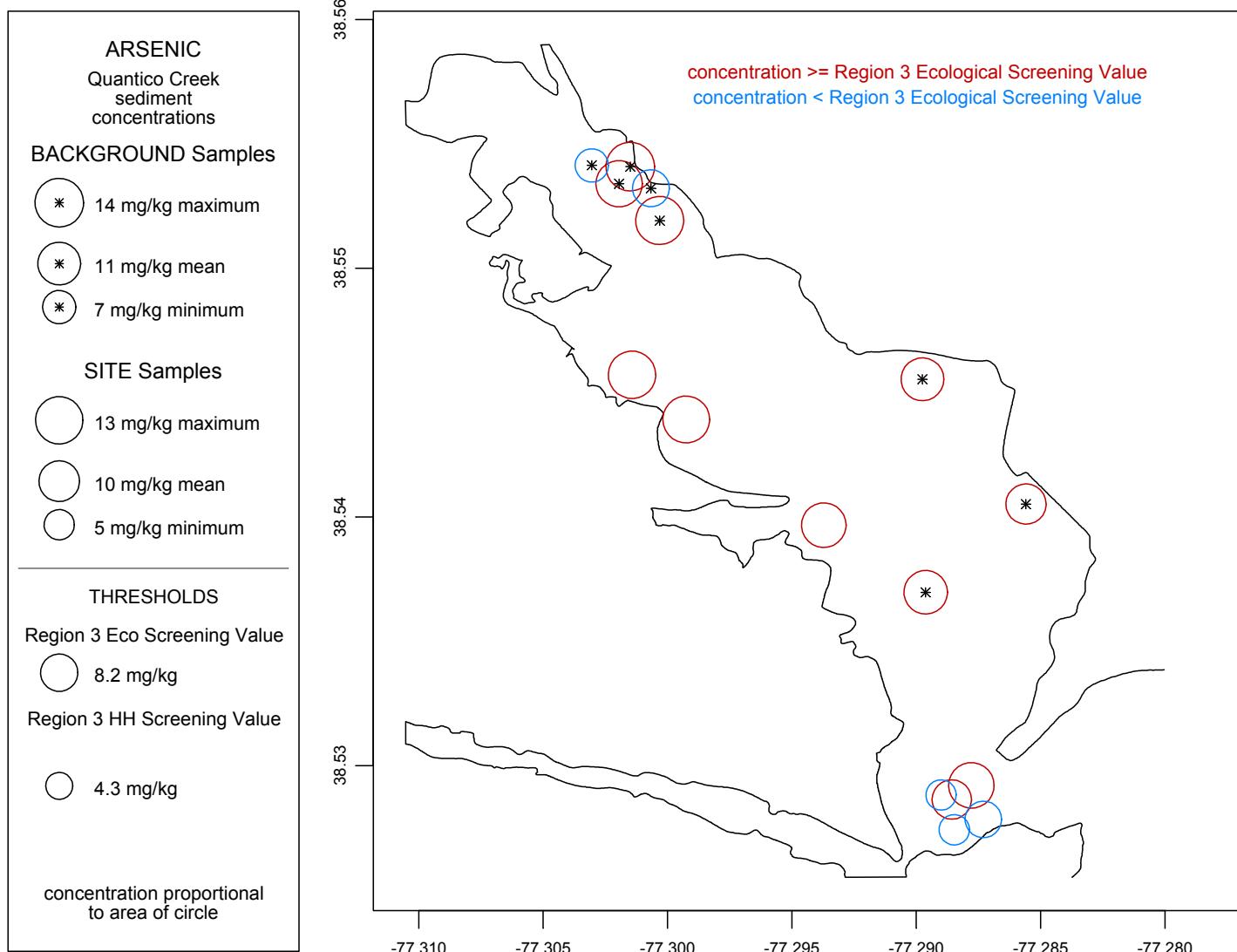


Figure A-3. Bubble Plot of Arsenic Concentrations in Quantico Creek Sediments.

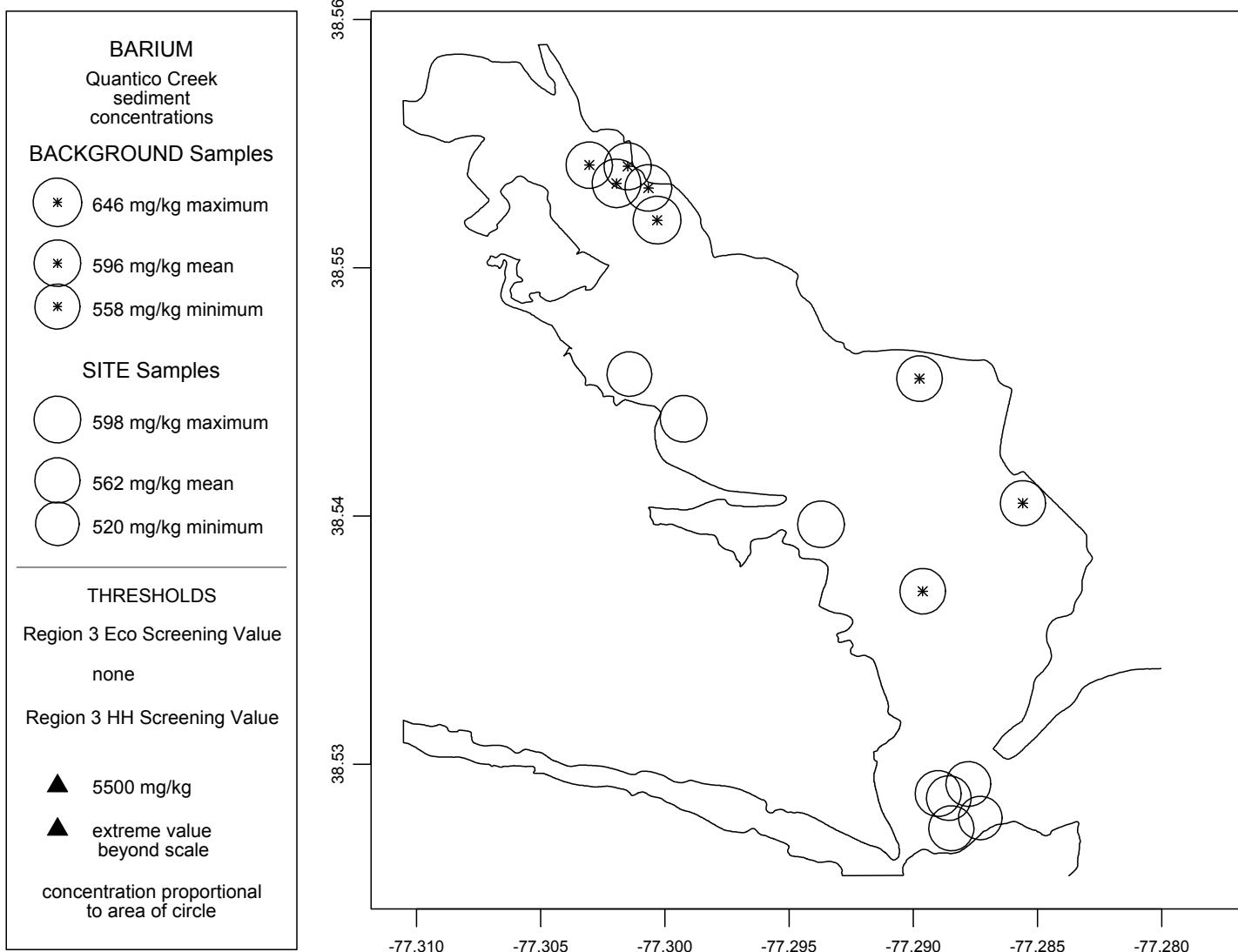


Figure A-4. Bubble Plot of Barium Concentrations in Quantico Creek Sediments.

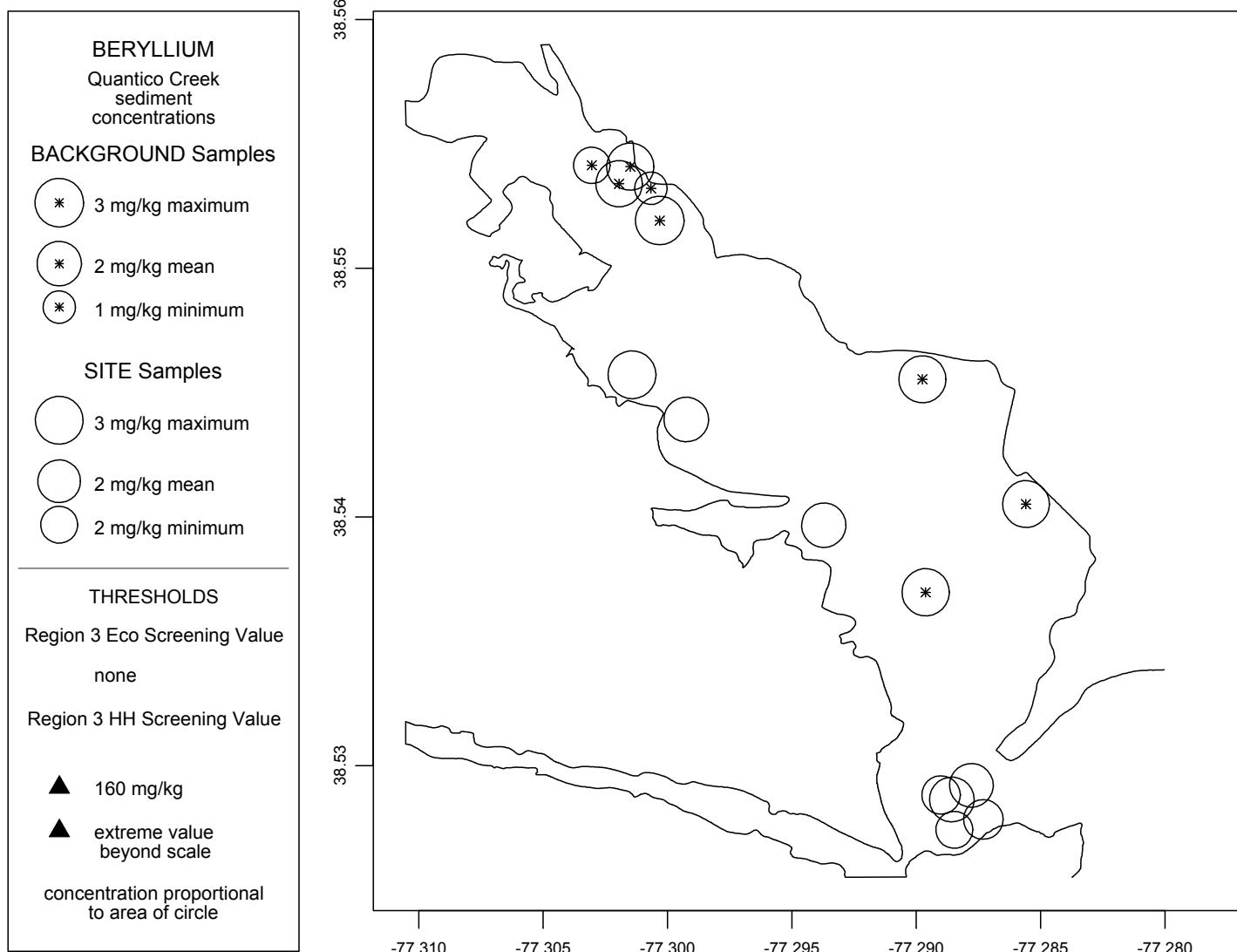


Figure A-5. Bubble Plot of Beryllium Concentrations in Quantico Creek Sediments.

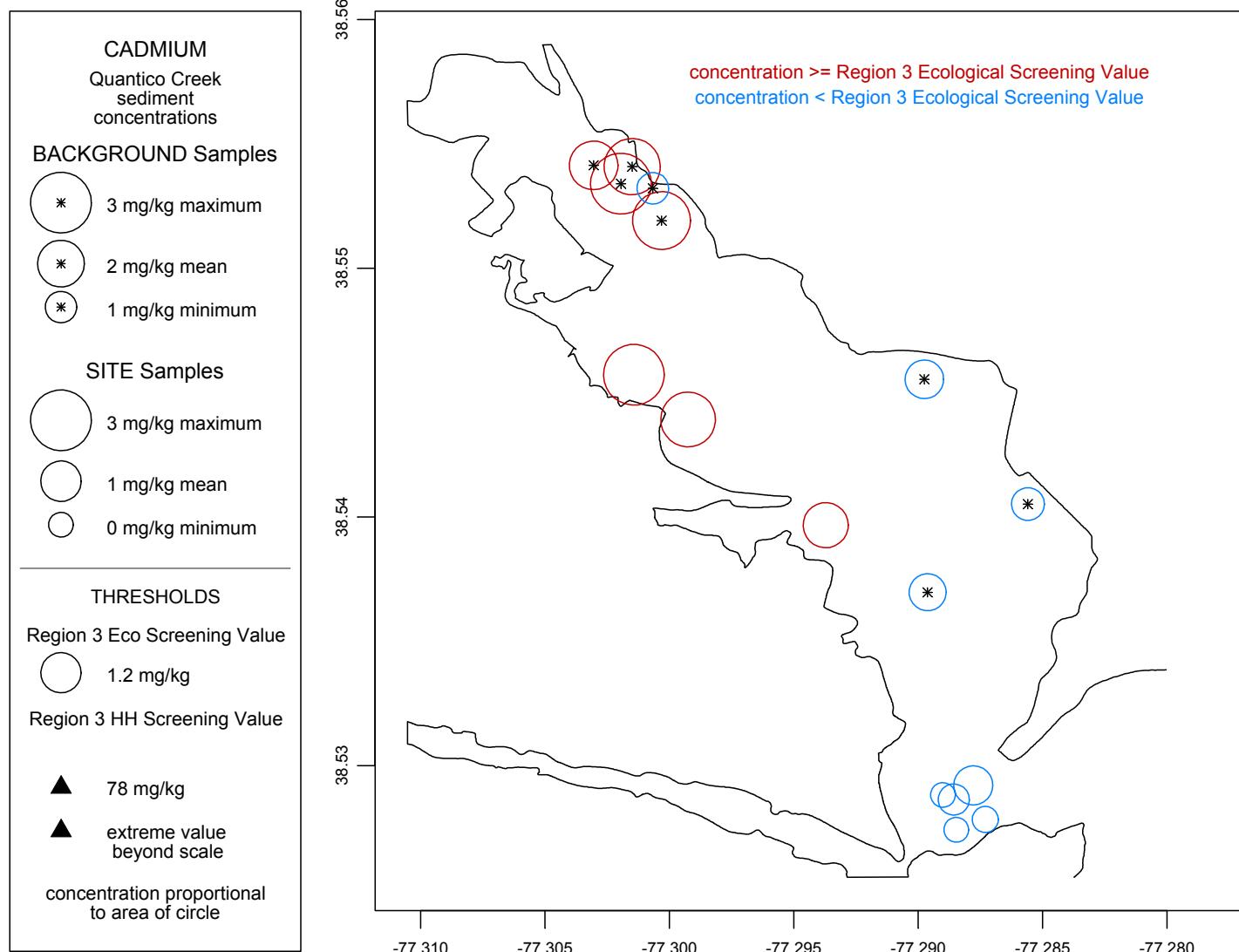


Figure A-6. Bubble Plot of Cadmium Concentrations in Quantico Creek Sediments.

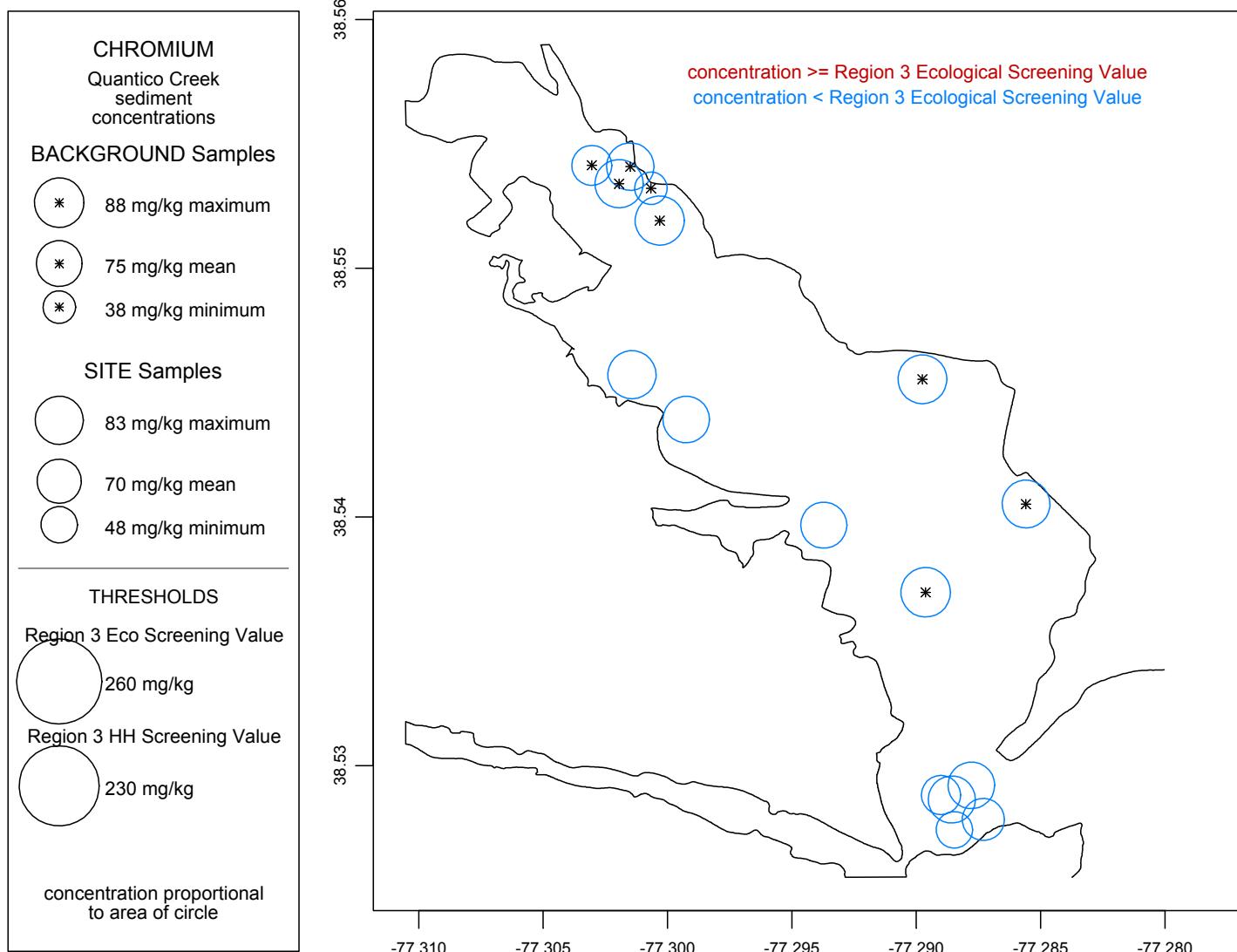


Figure A-7. Bubble Plot of Chromium Concentrations in Quantico Creek Sediments.

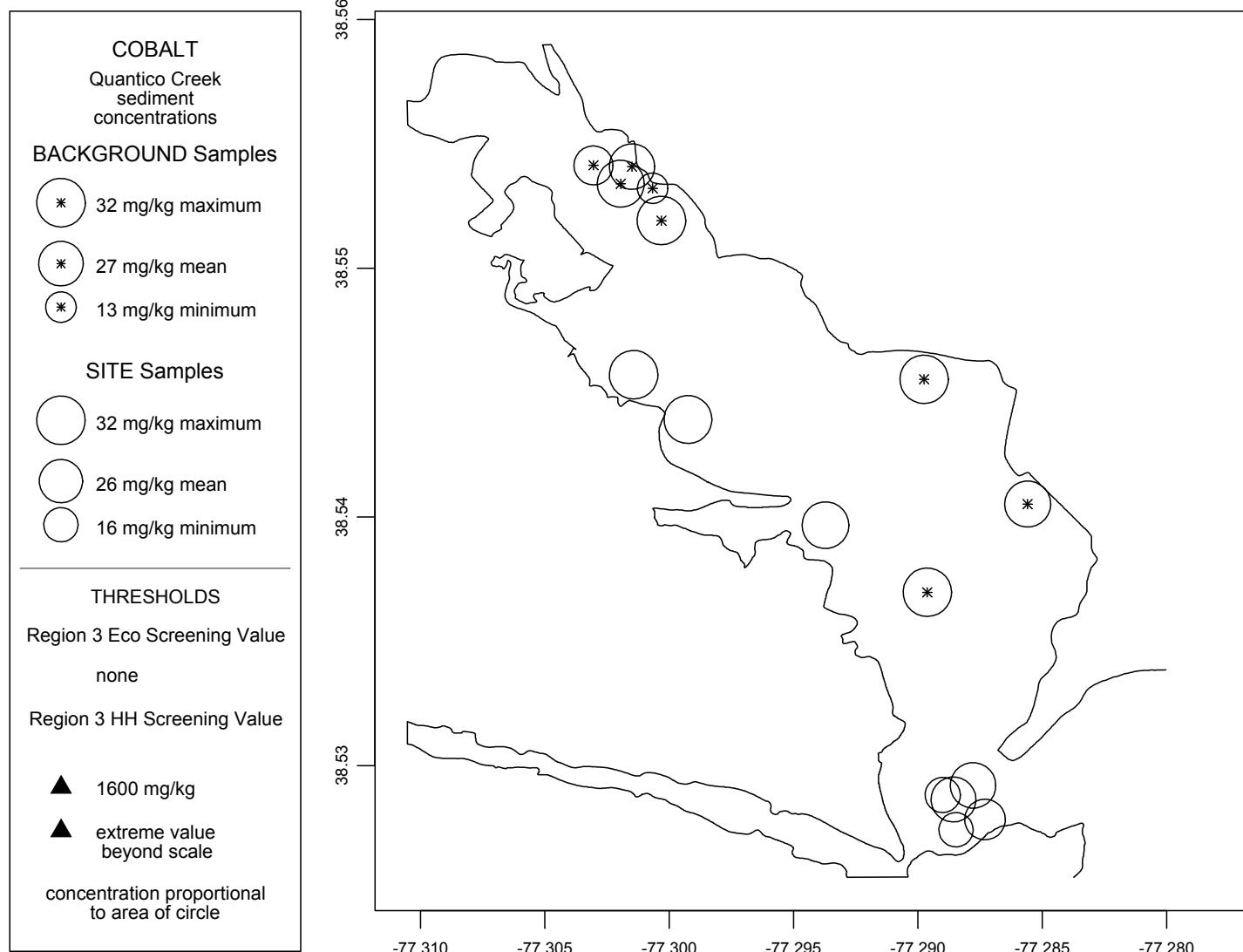


Figure A-8. Bubble Plot of Cobalt Concentrations in Quantico Creek Sediments.

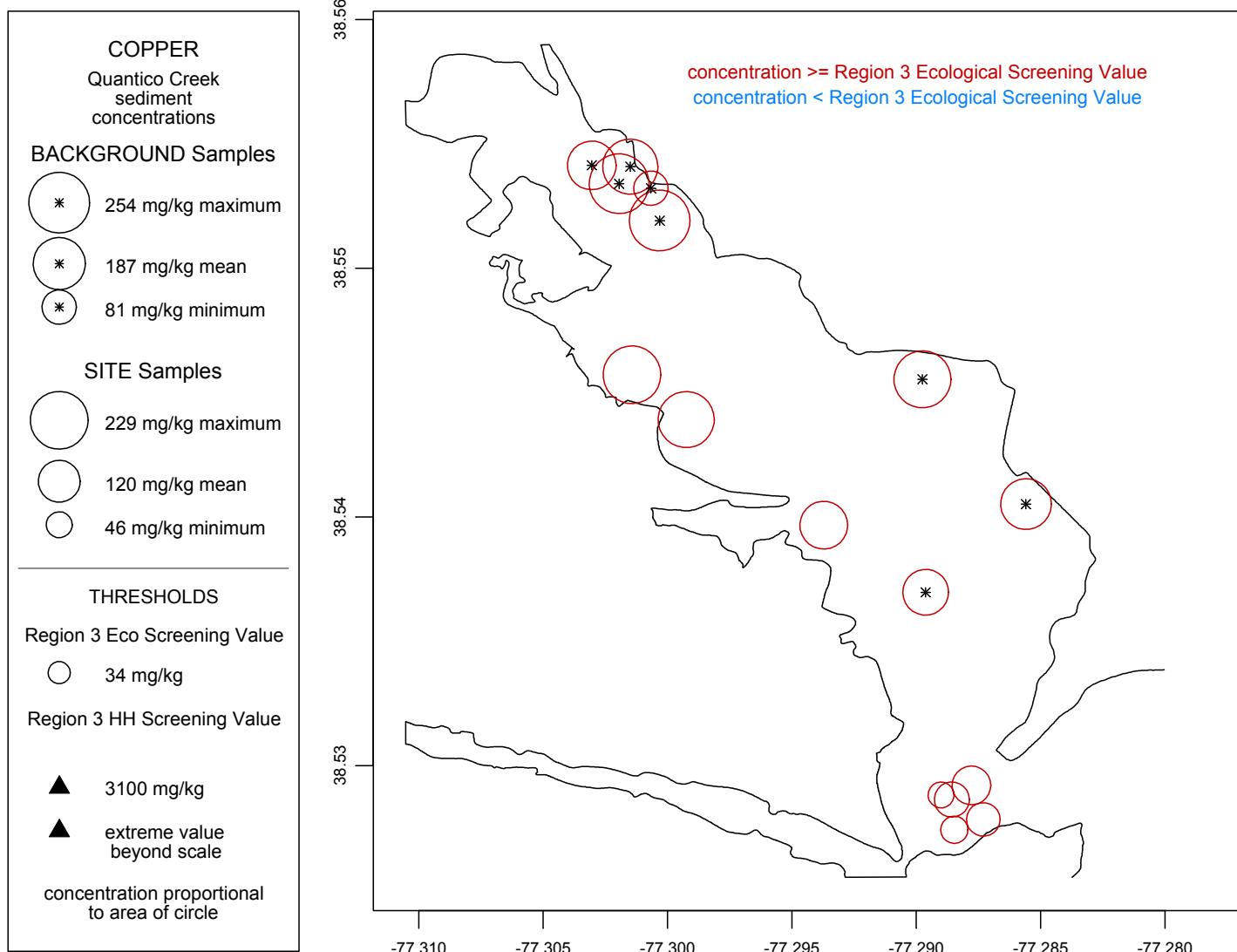


Figure A-9. Bubble Plot of Copper Concentrations in Quantico Creek Sediments.

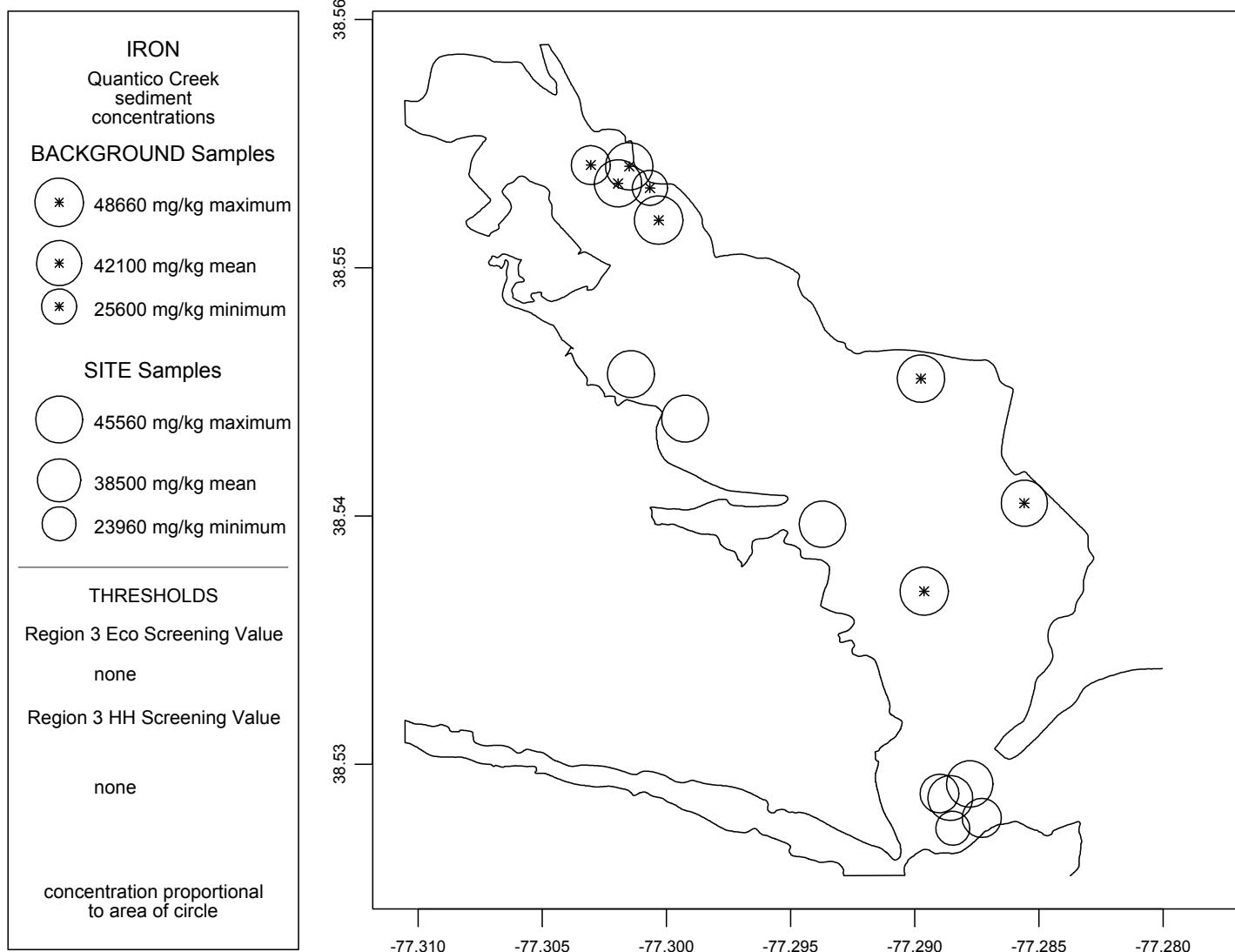


Figure A-10. Bubble Plot of Iron Concentrations in Quantico Creek Sediments.

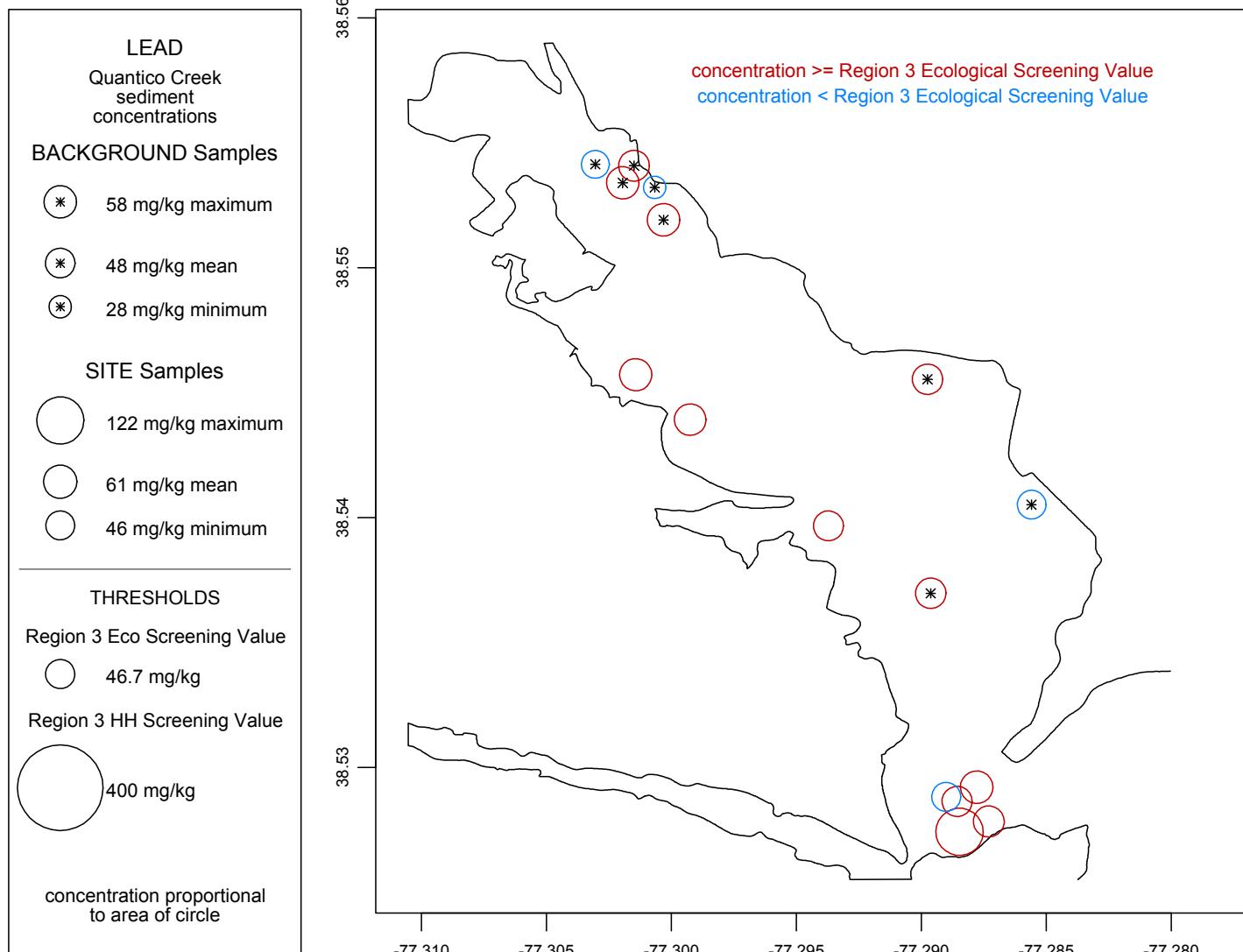


Figure A-11. Bubble Plot of Lead Concentrations in Quantico Creek Sediments.

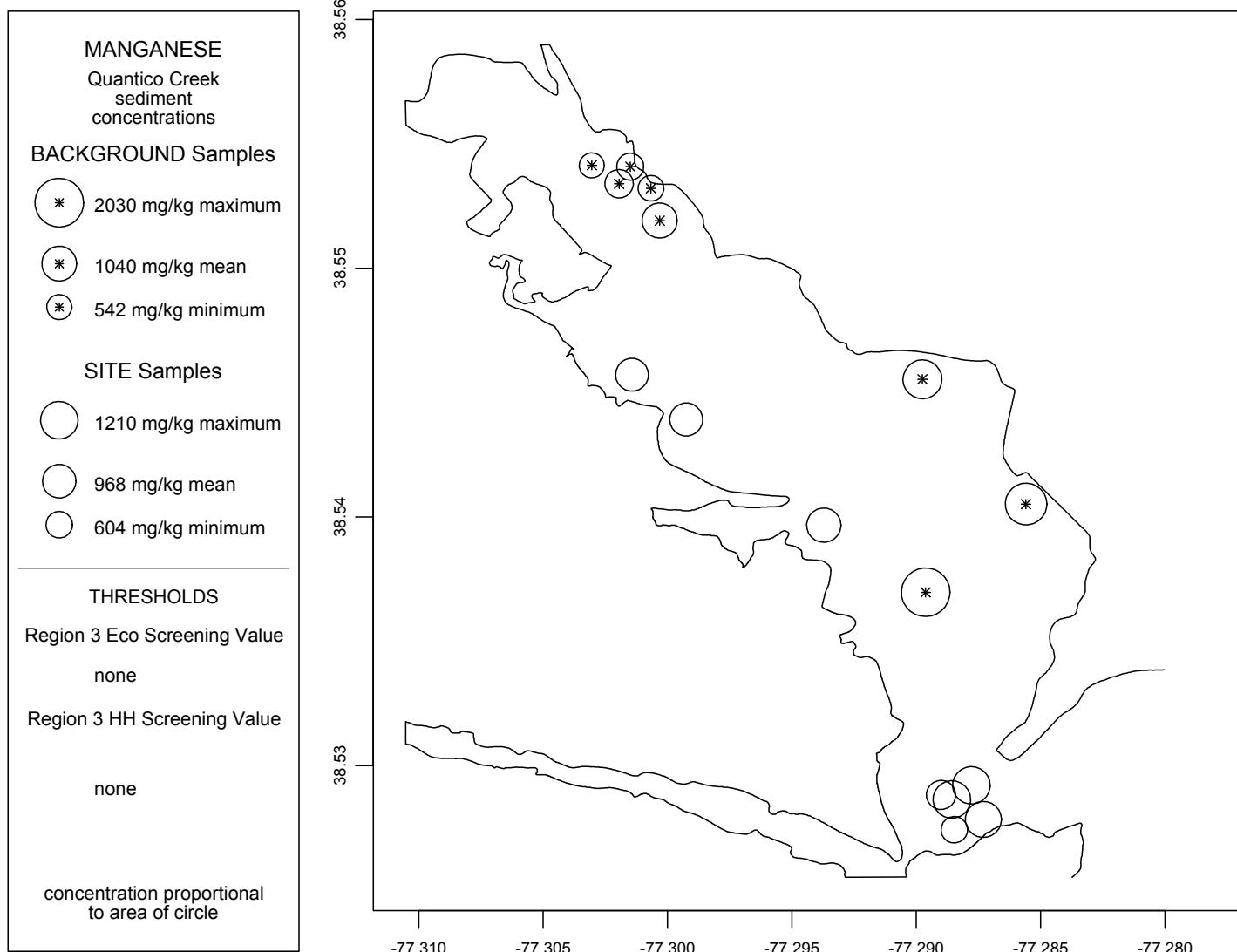


Figure A-12. Bubble Plot of Manganese Concentrations in Quantico Creek Sediments.

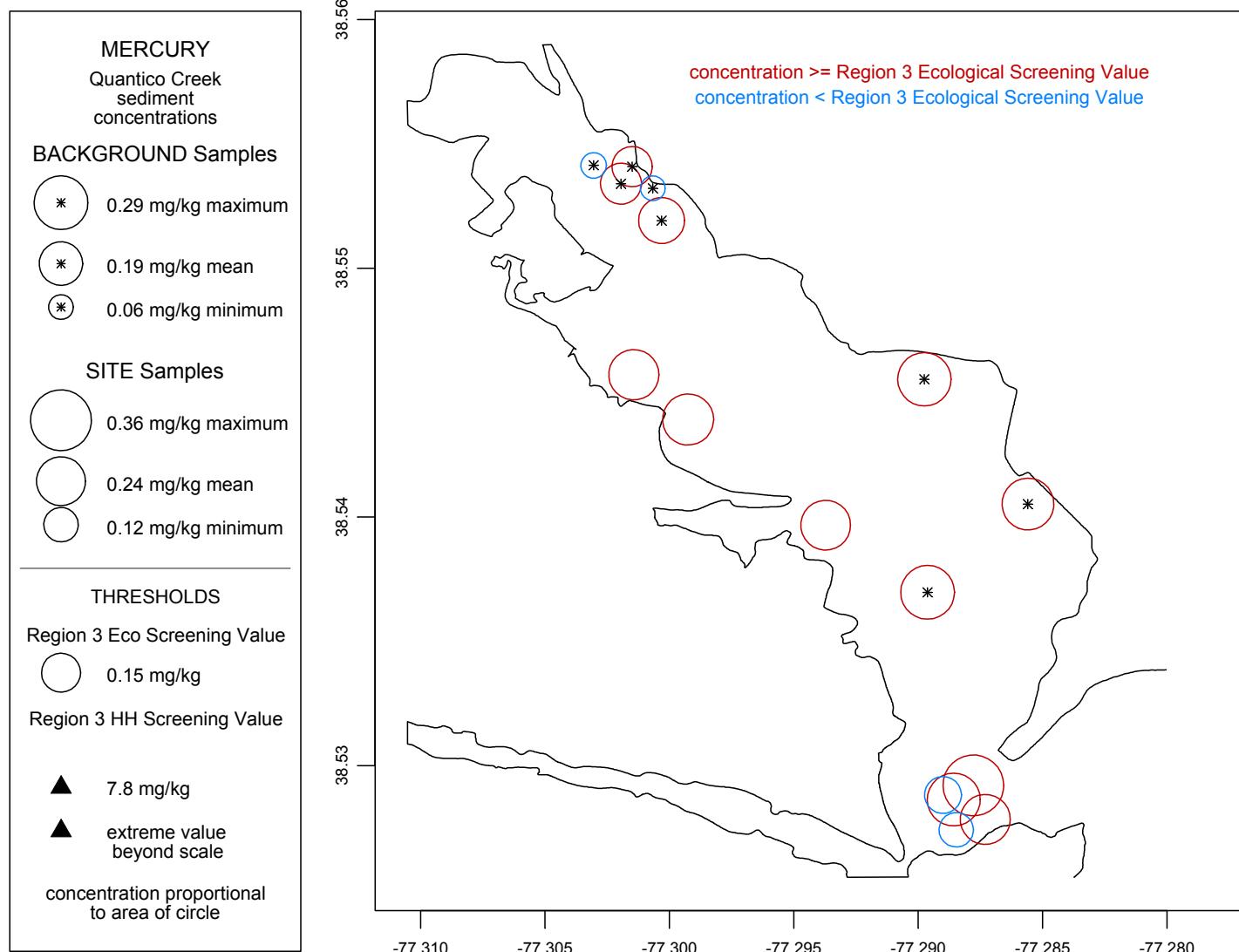


Figure A-13. Bubble Plot of Mercury Concentrations in Quantico Creek Sediments.

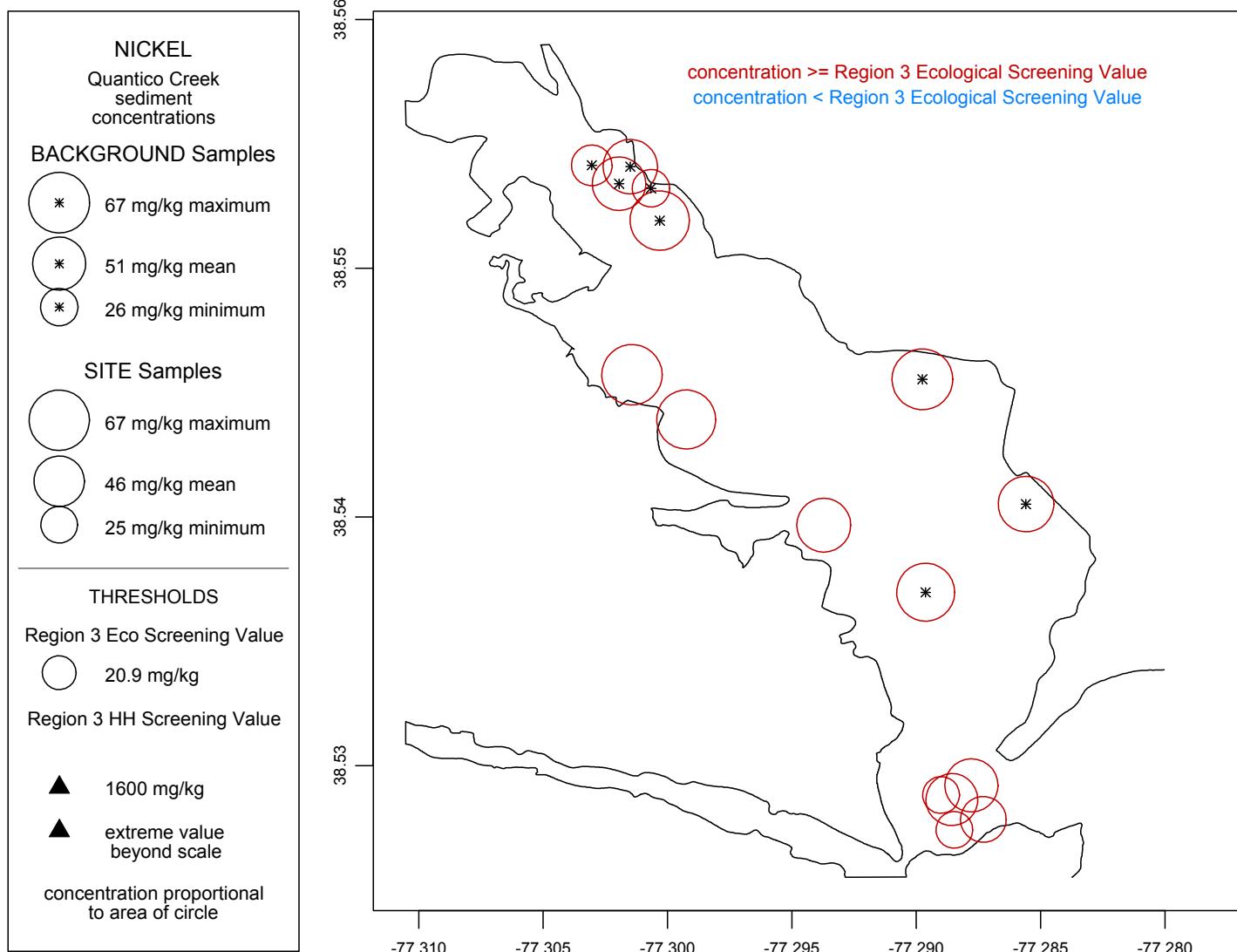


Figure A-14. Bubble Plot of Nickel Aluminum Concentrations in Quantico Creek Sediments.

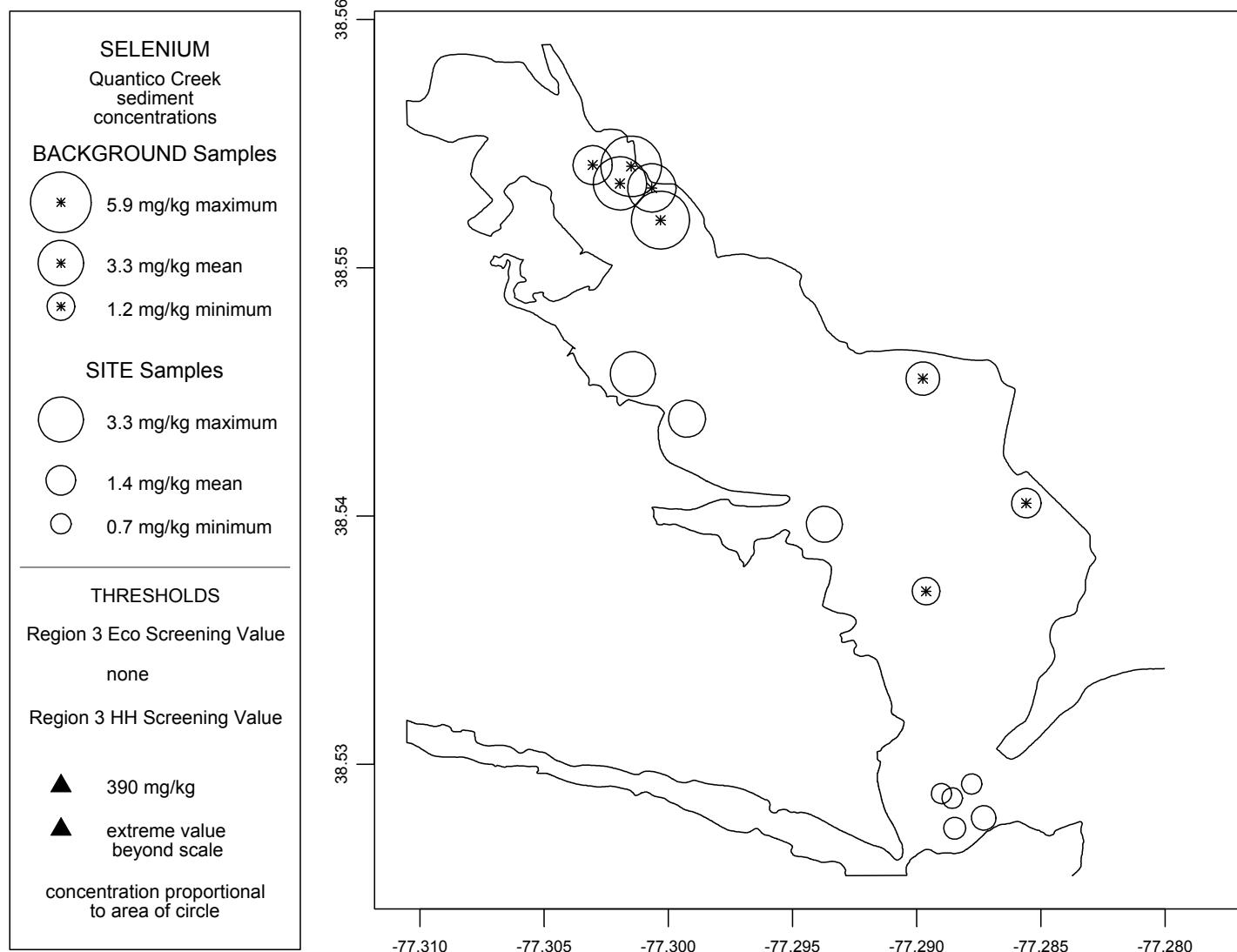


Figure A-15. Bubble Plot of Selenium Concentrations in Quantico Creek Sediments.

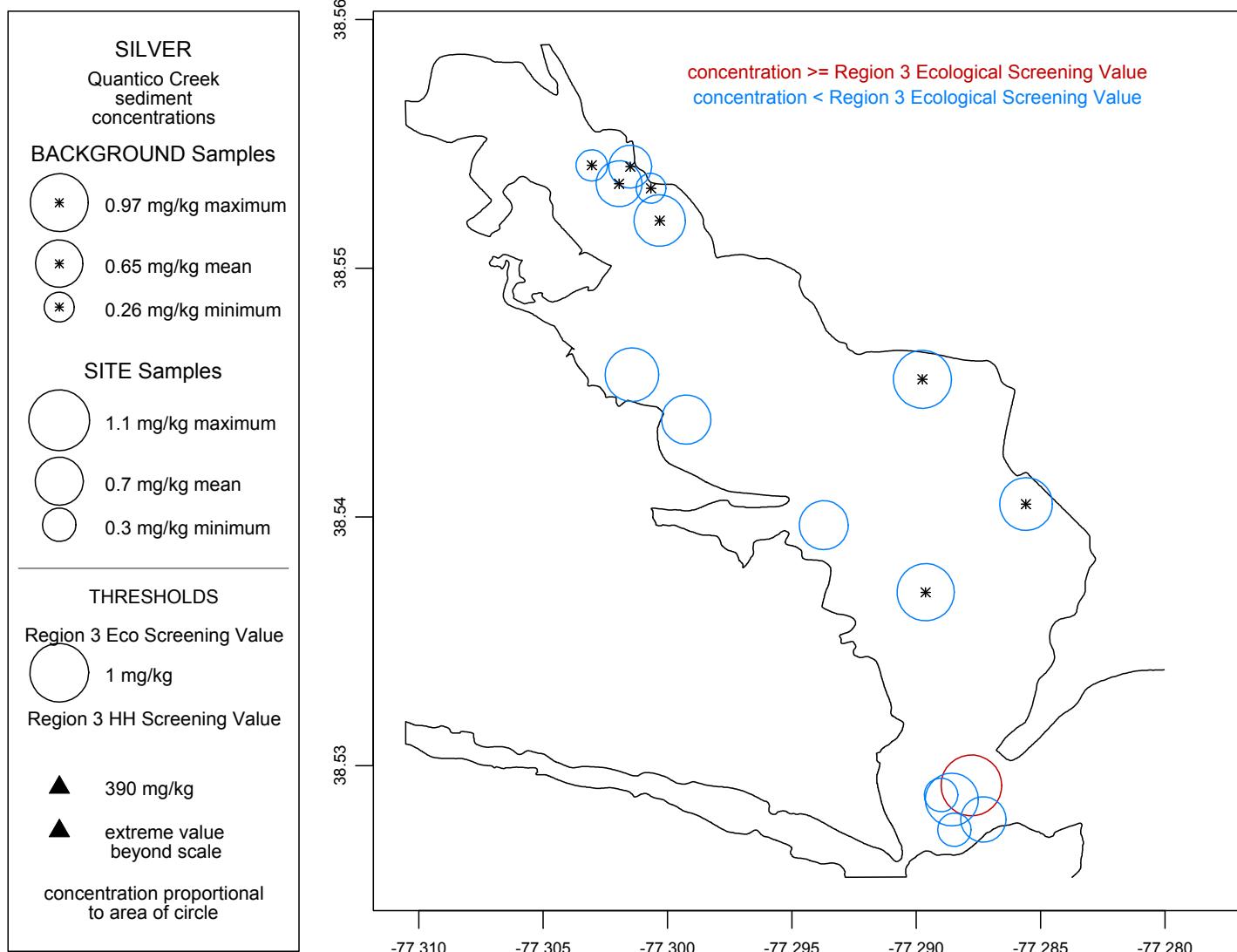


Figure A-16. Bubble Plot of Silver Concentrations in Quantico Creek Sediments.

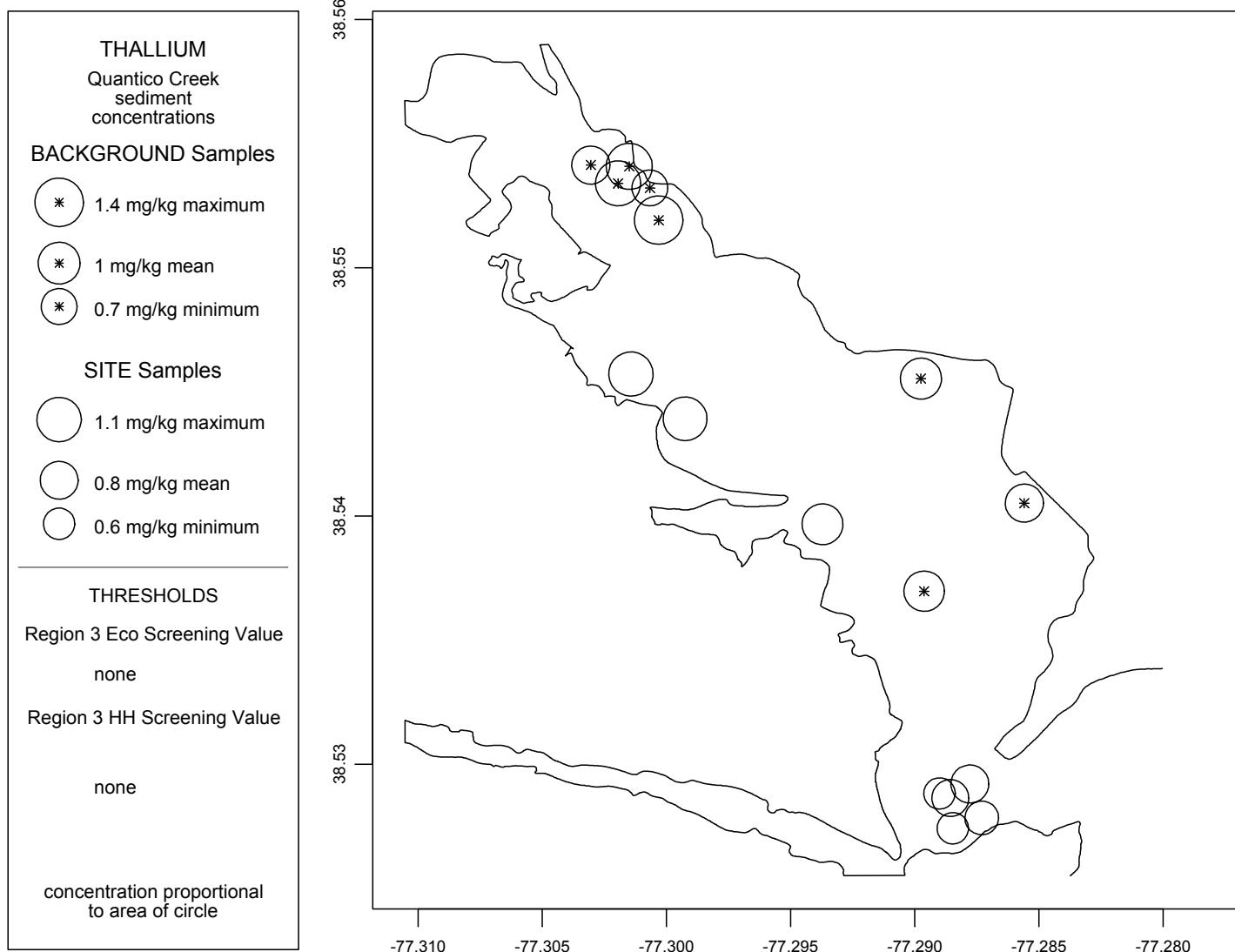


Figure A-17. Bubble Plot of Thallium Concentrations in Quantico Creek Sediments.

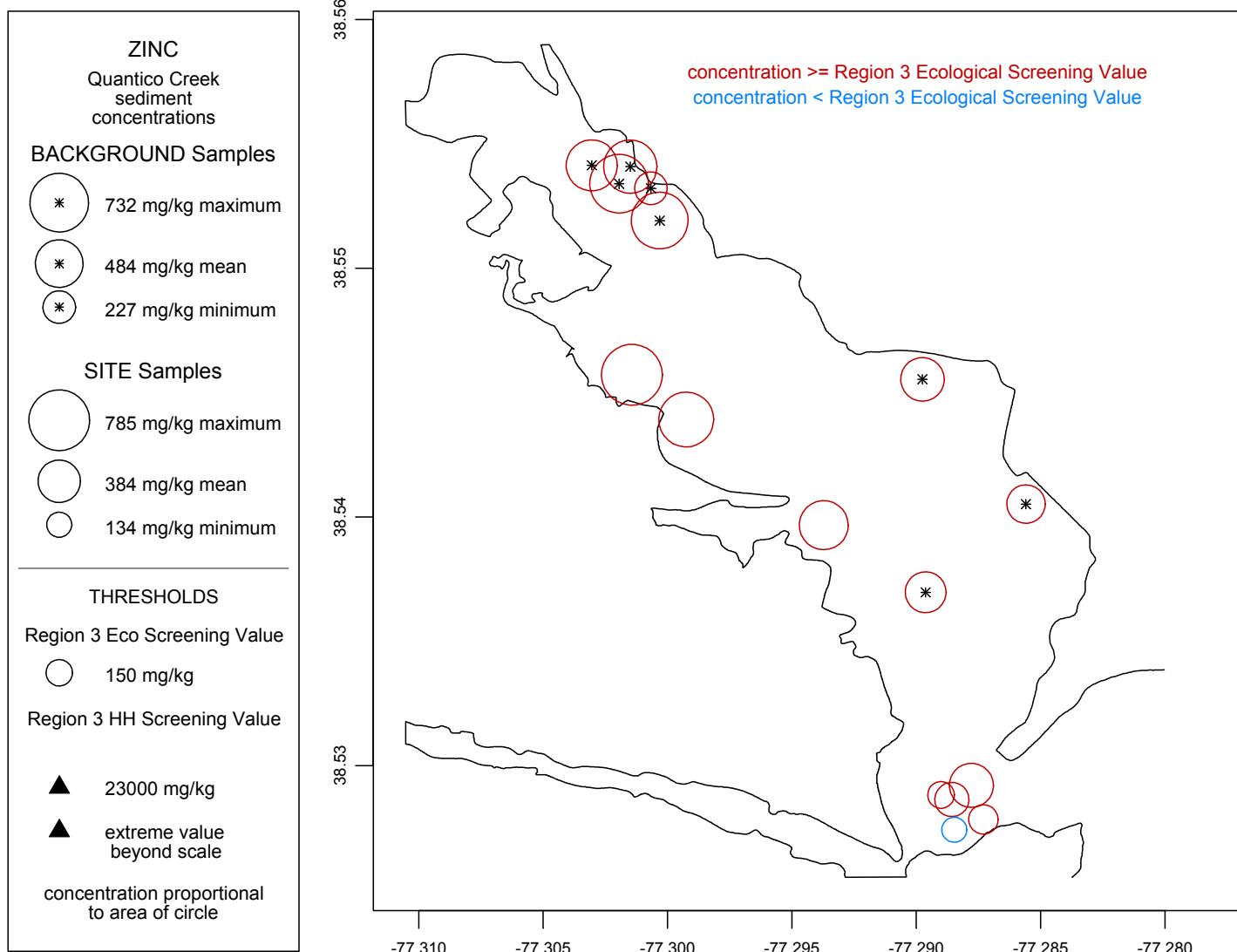


Figure A-18. Bubble Plot of Zinc Concentrations in Quantico Creek Sediments.

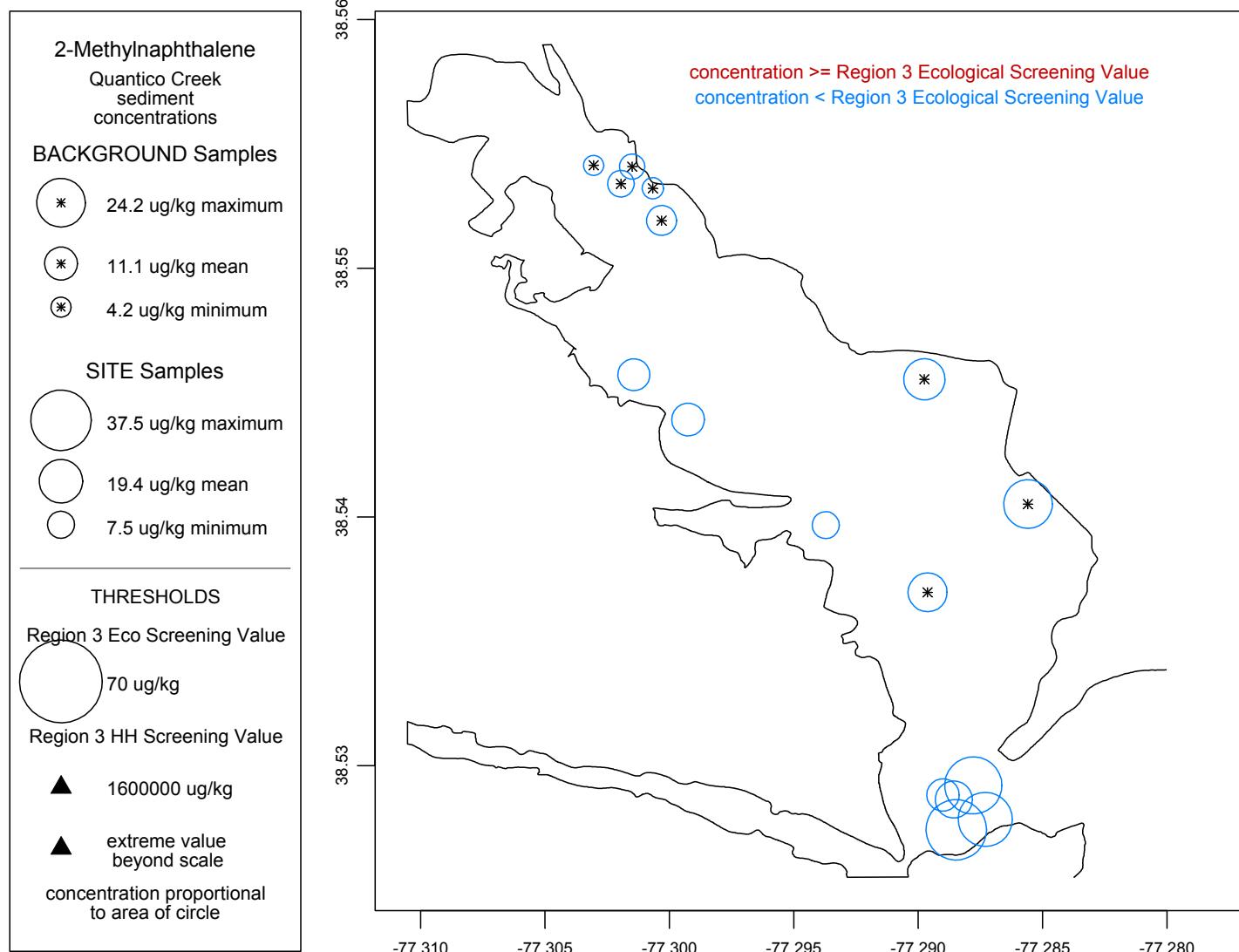


Figure A-19. Bubble Plot of 2-Methylnaphthalene Concentrations in Quantico Creek Sediments.

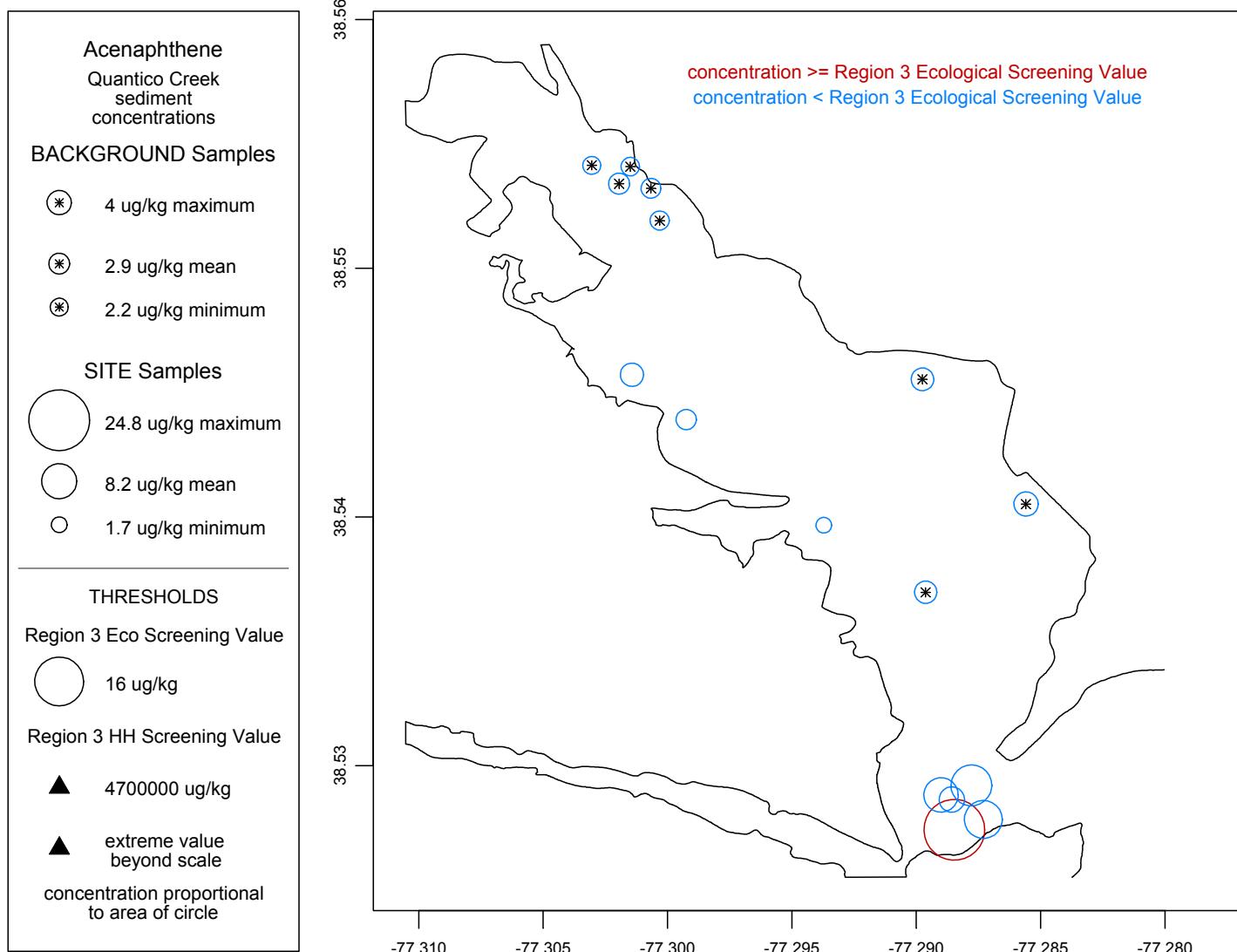


Figure A-20. Bubble Plot of Acenaphthene Concentrations in Quantico Creek Sediments.

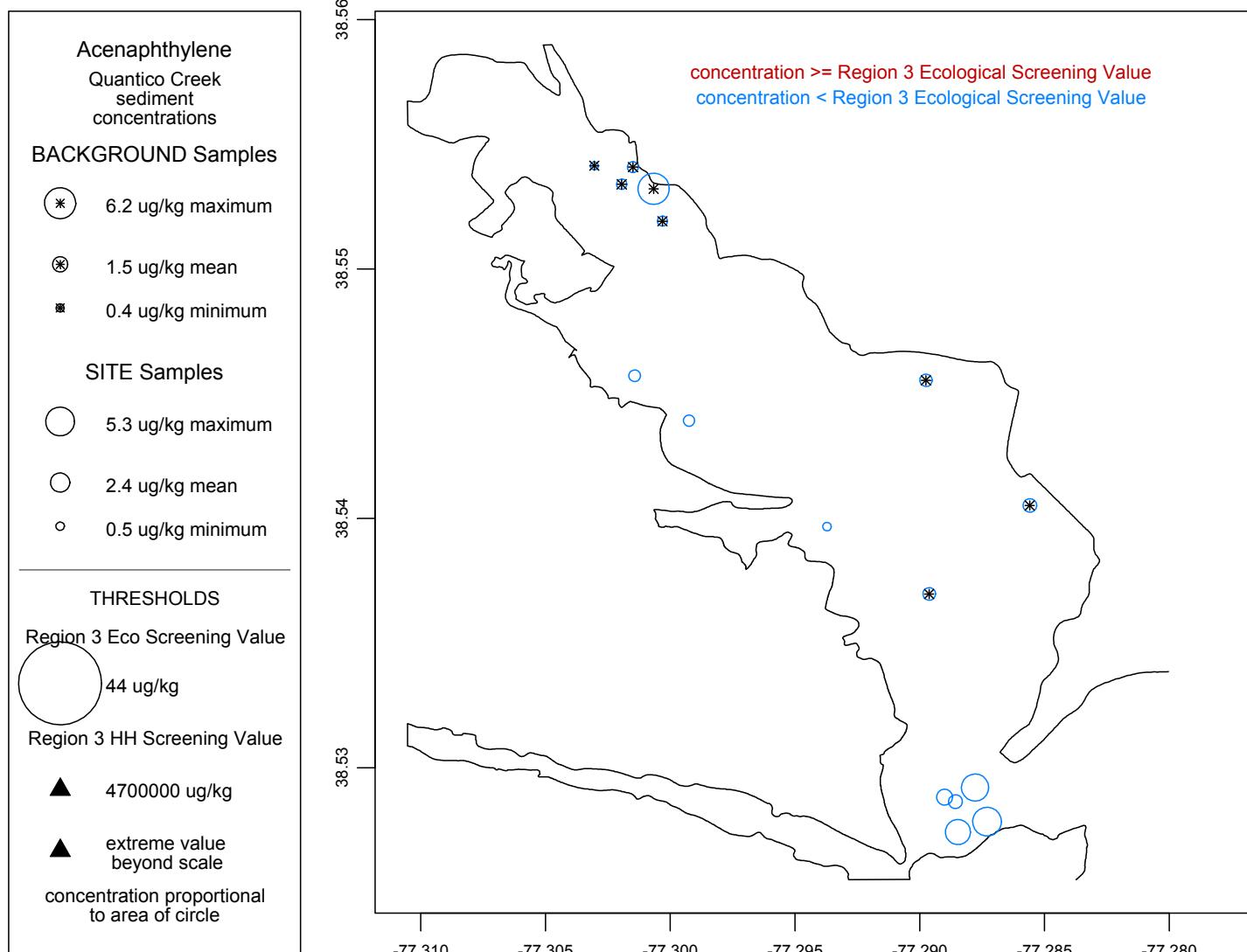


Figure A-21. Bubble Plot of Acenaphthylene Concentrations in Quantico Creek Sediments.

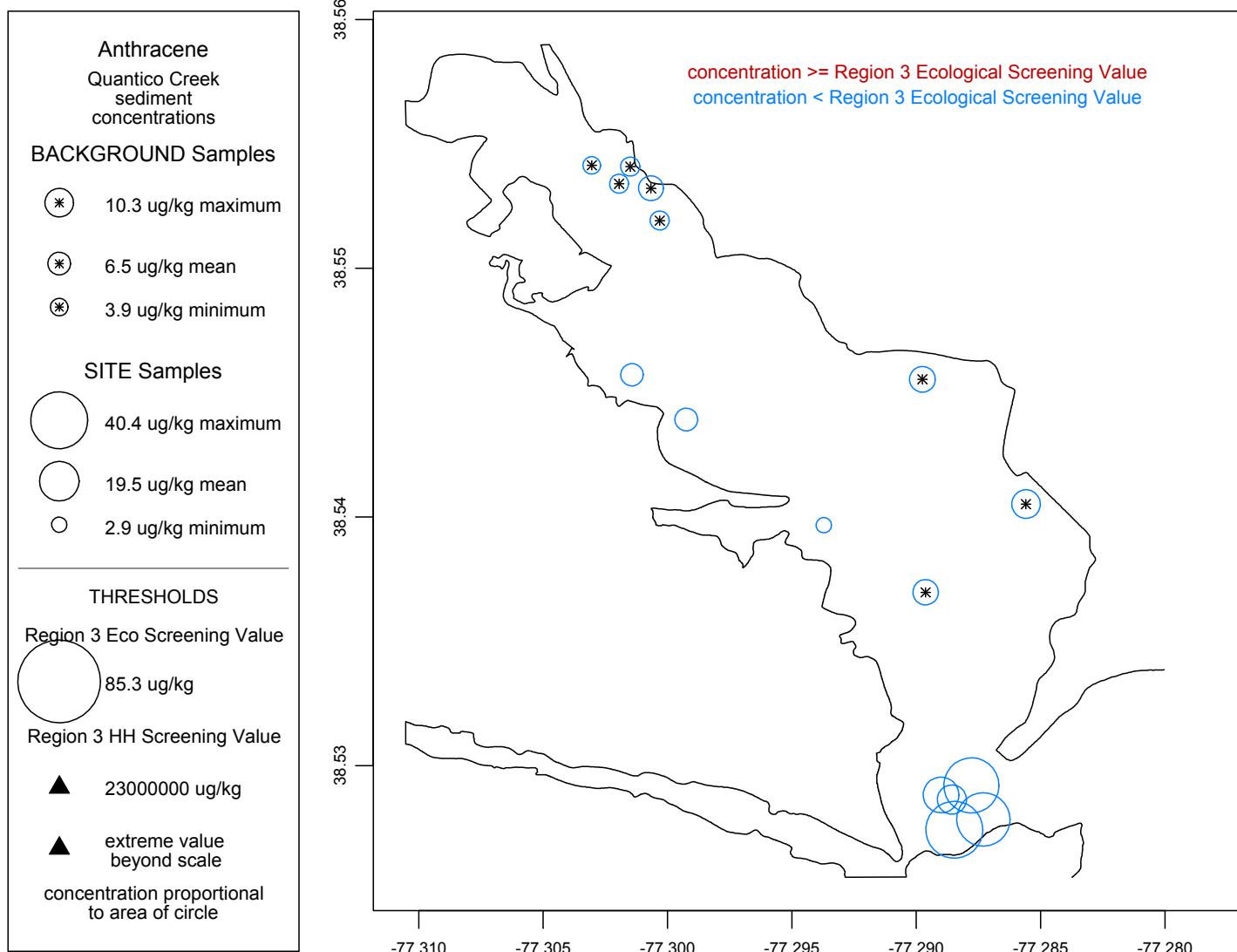


Figure A-22. Bubble Plot of Anthracene Concentrations in Quantico Creek Sediments.

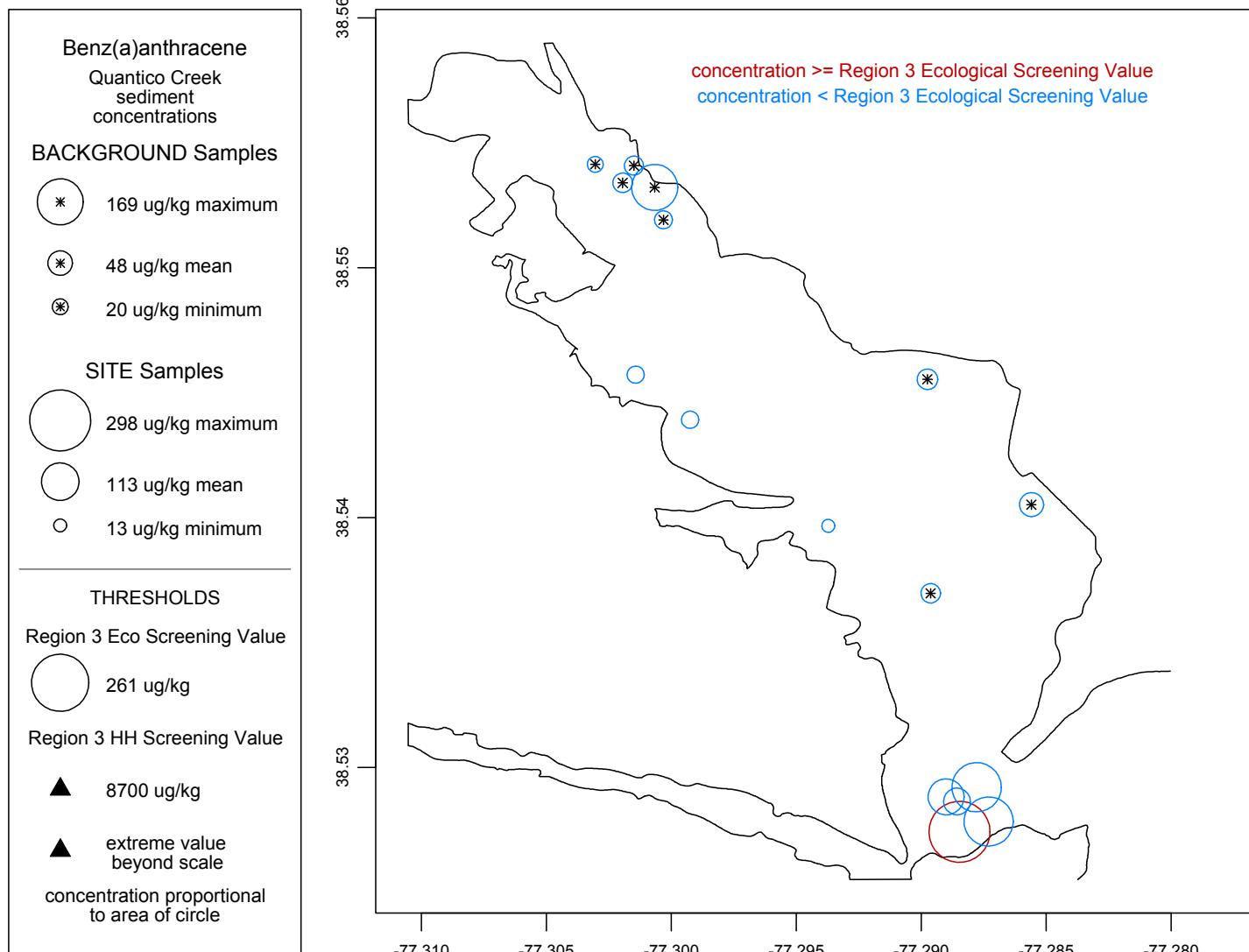


Figure A-23. Bubble Plot of Benzo(a)anthracene Concentrations in Quantico Creek Sediments.

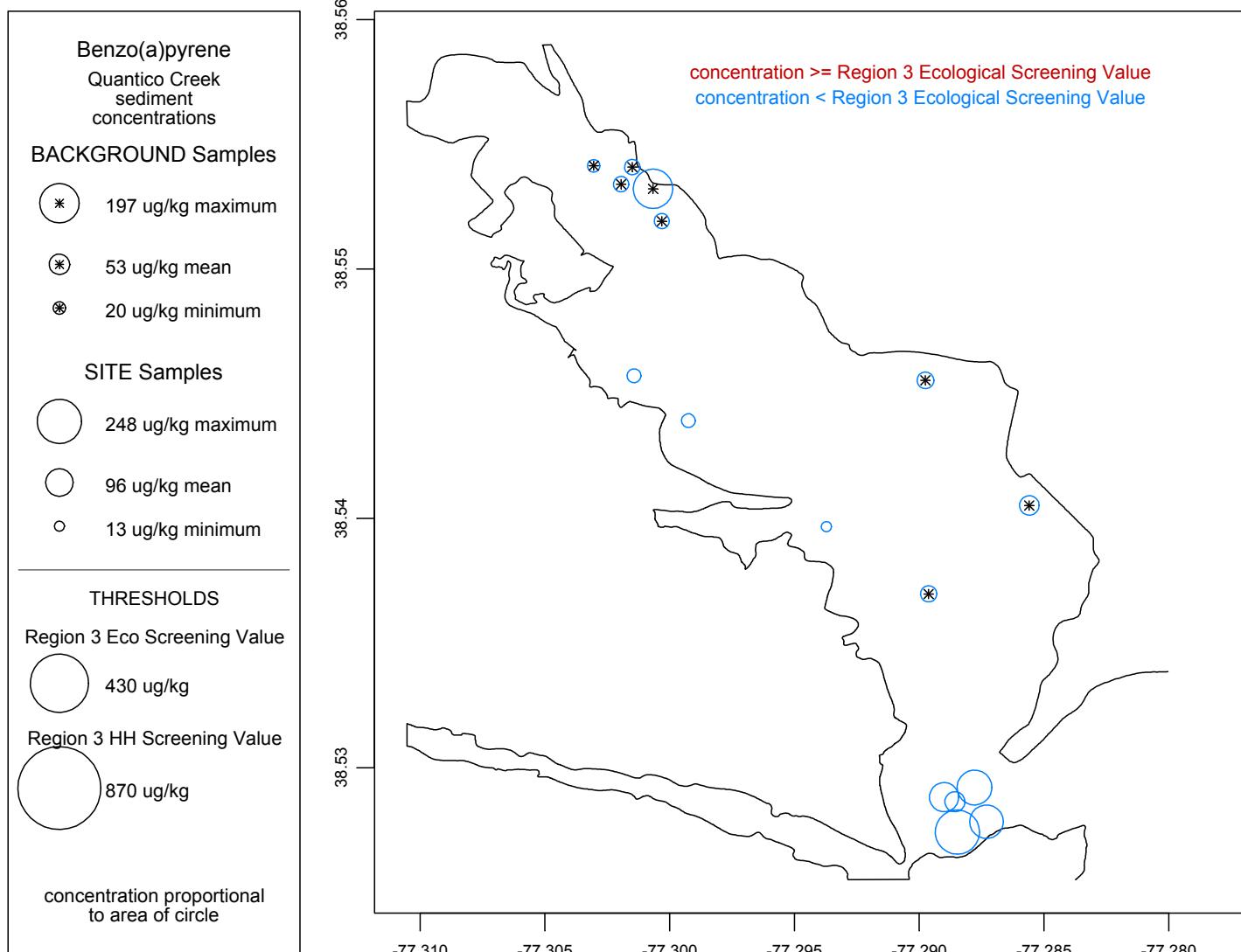


Figure A-24. Bubble Plot of Benzo(a)pyrene Concentrations in Quantico Creek Sediments.

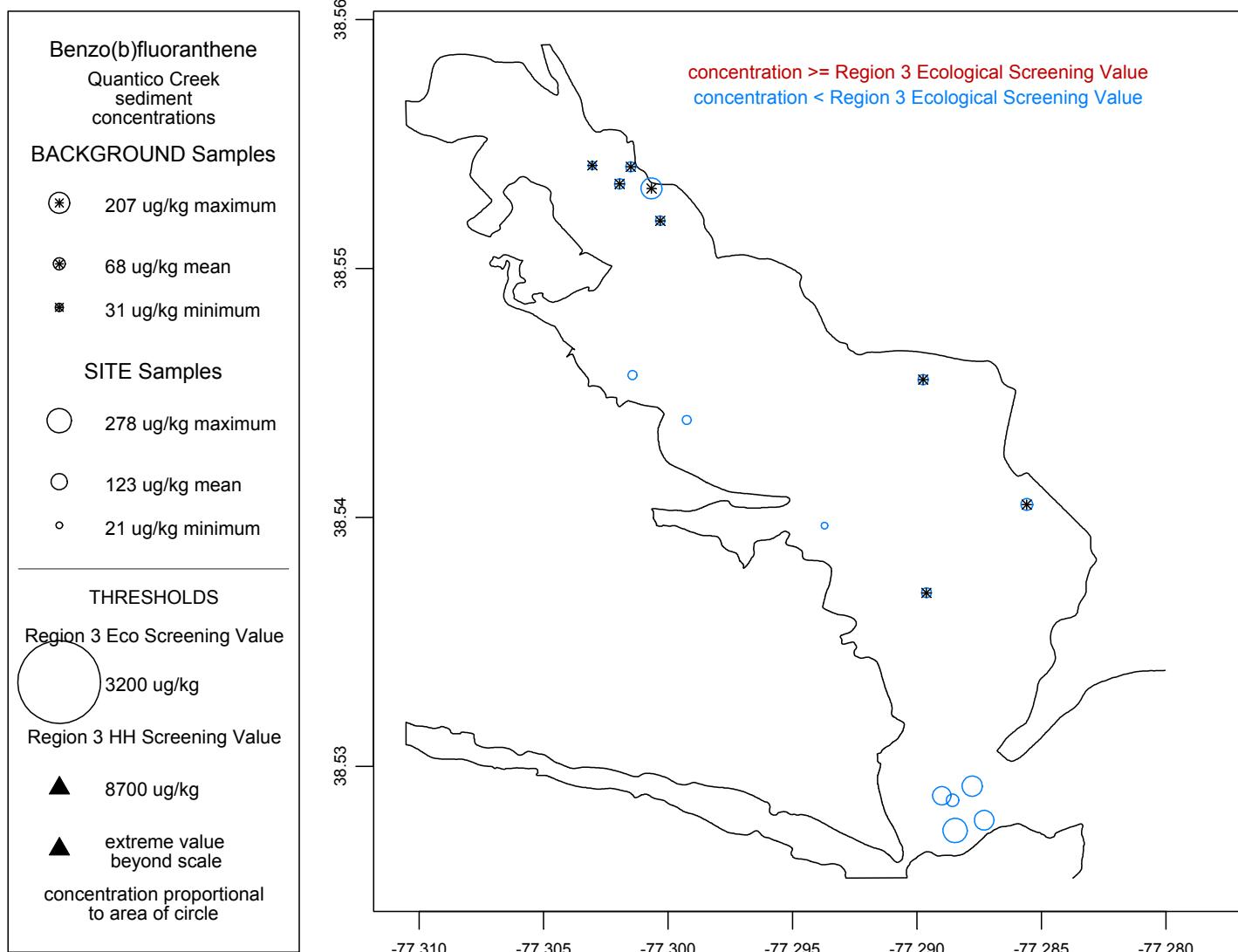


Figure A-25. Bubble Plot of Benzo(b)fluoranthene Concentrations in Quantico Creek Sediments.

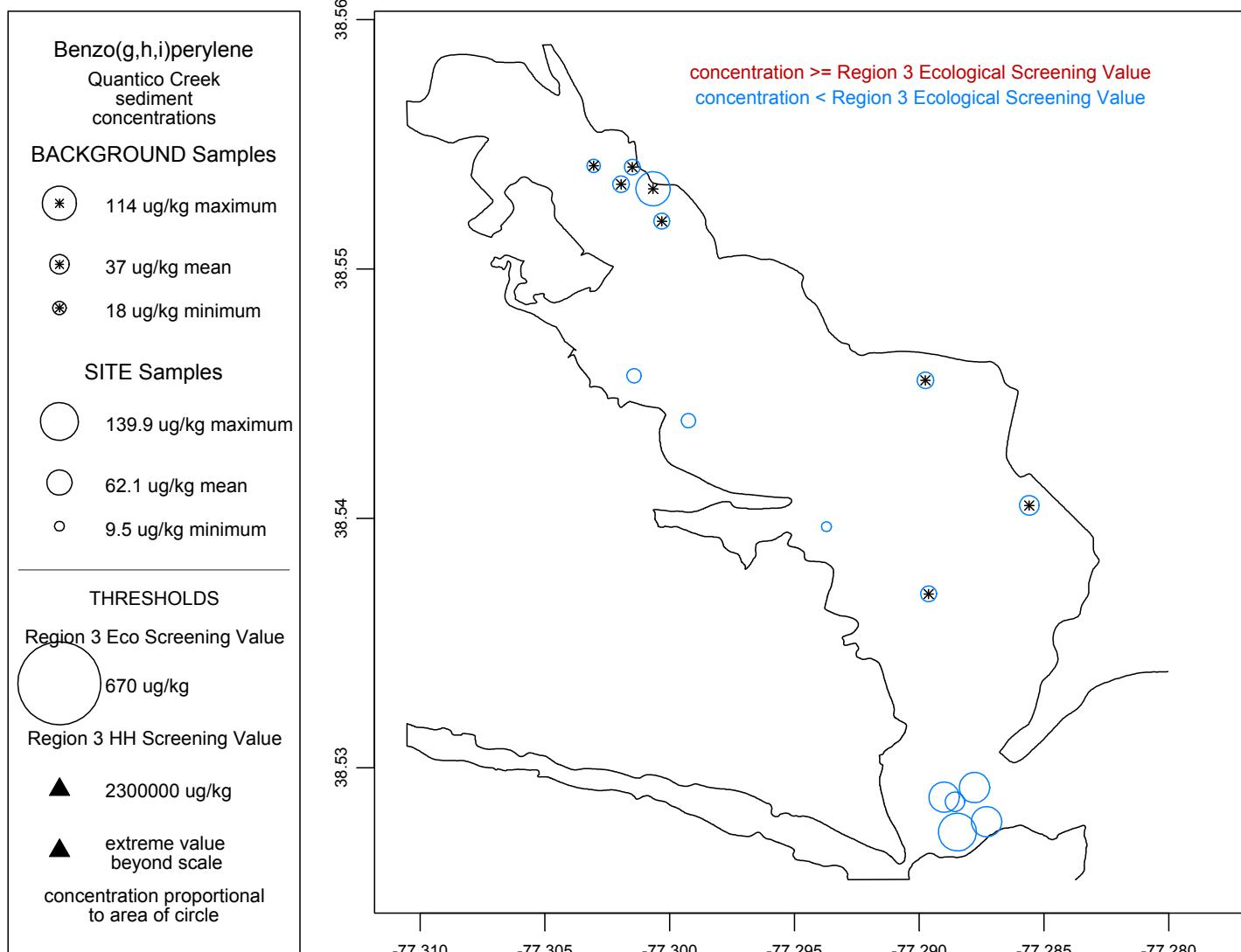


Figure A-26. Bubble Plot of Benzo(g,h,i)perylene Concentrations in Quantico Creek Sediments.

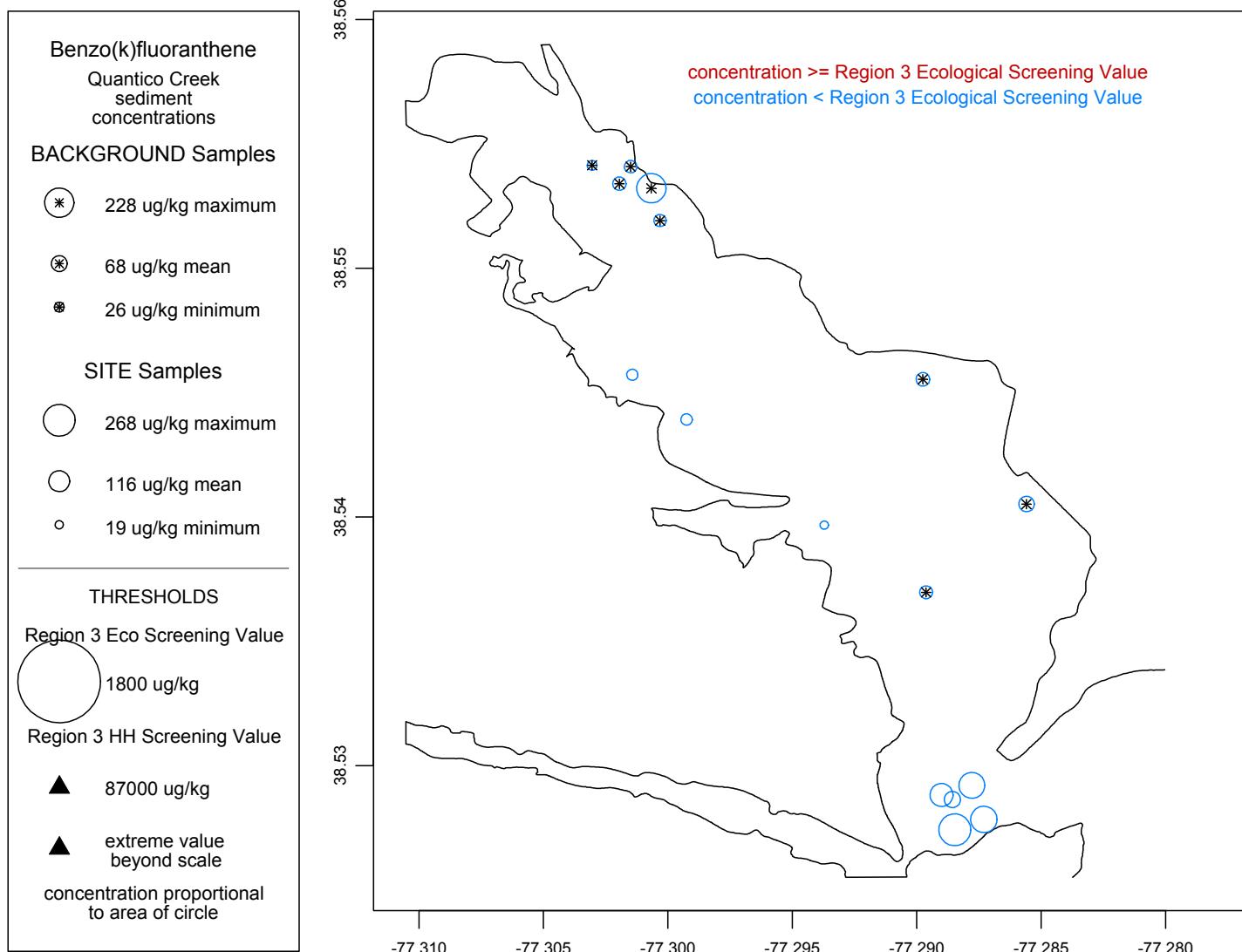


Figure A-27. Bubble Plot of Benzo(k)fluoranthene Concentrations in Quantico Creek Sediments.

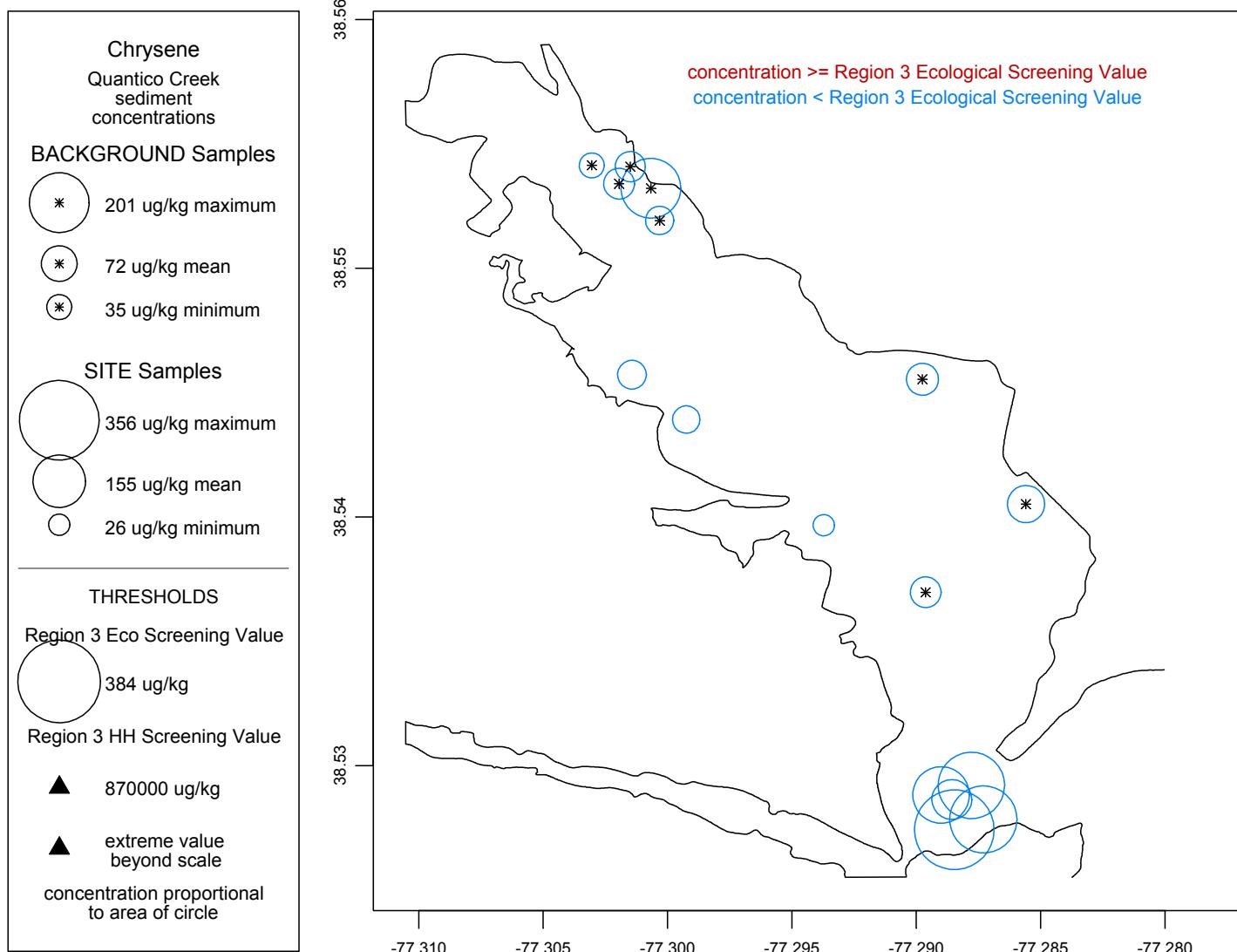


Figure A-28. Bubble Plot of Chrysene Concentrations in Quantico Creek Sediments.

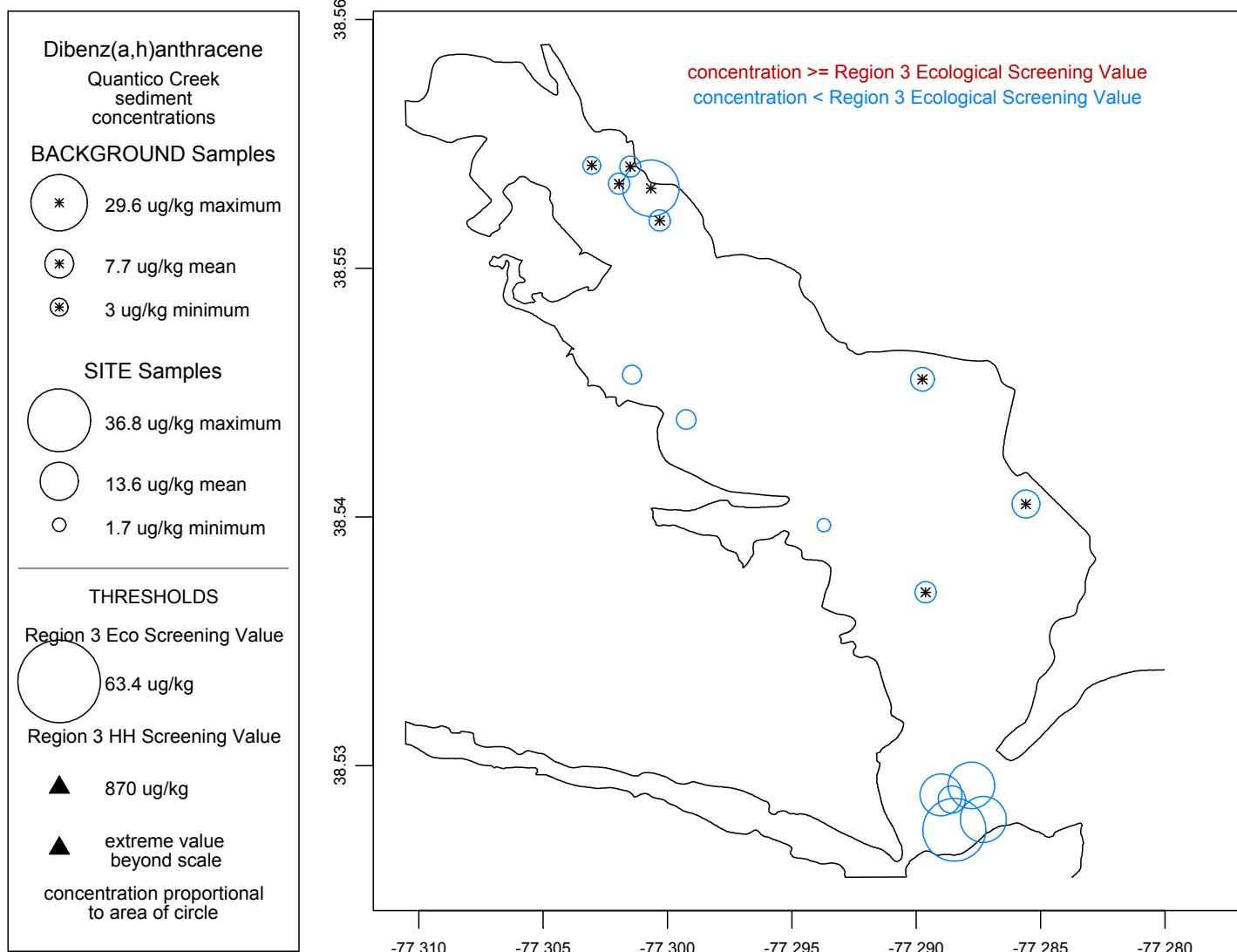


Figure A-29. Bubble Plot of Dibenzo(a,h)anthracene Concentrations in Quantico Creek Sediments.

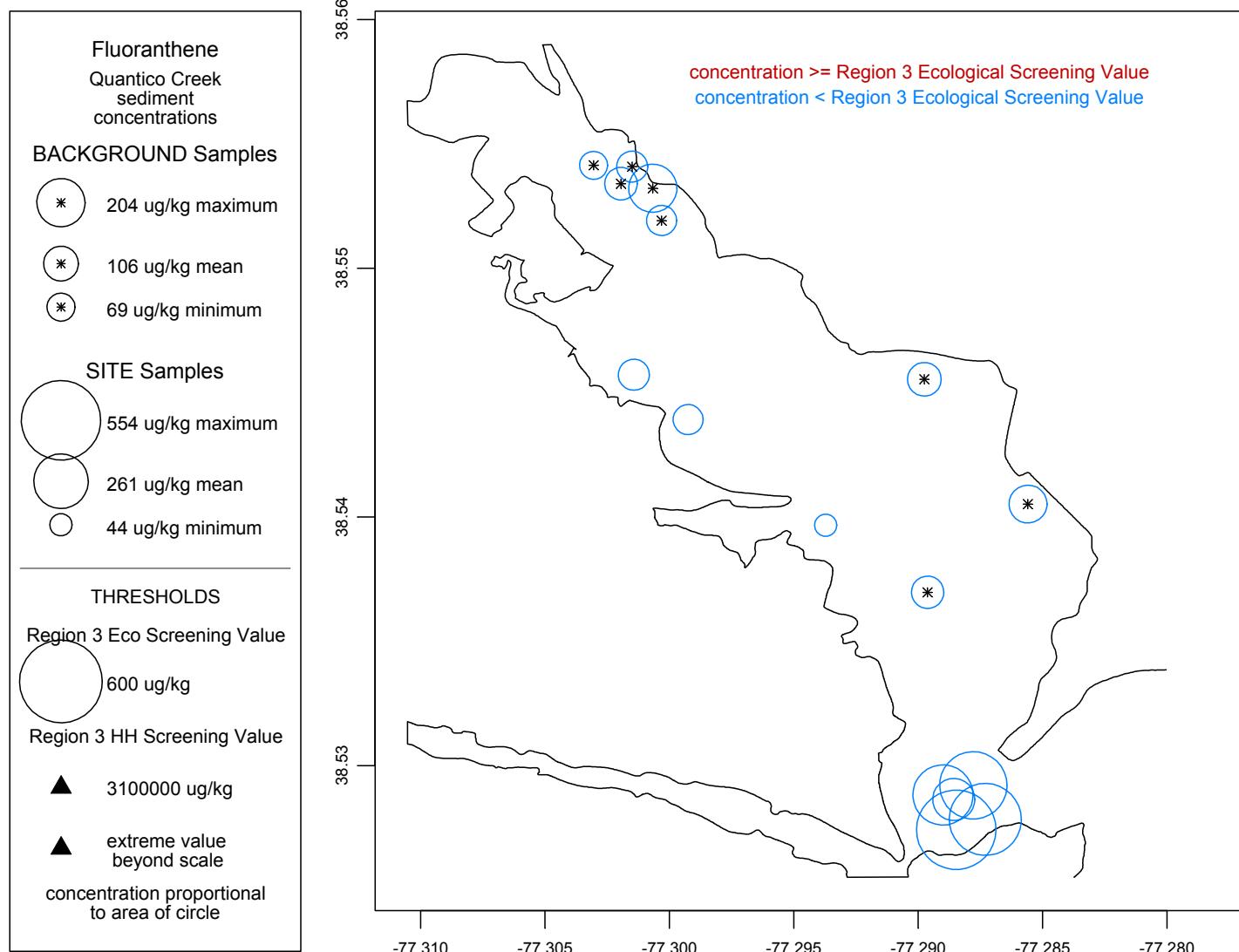


Figure A-30. Bubble Plot of Fluoranthene Concentrations in Quantico Creek Sediments.

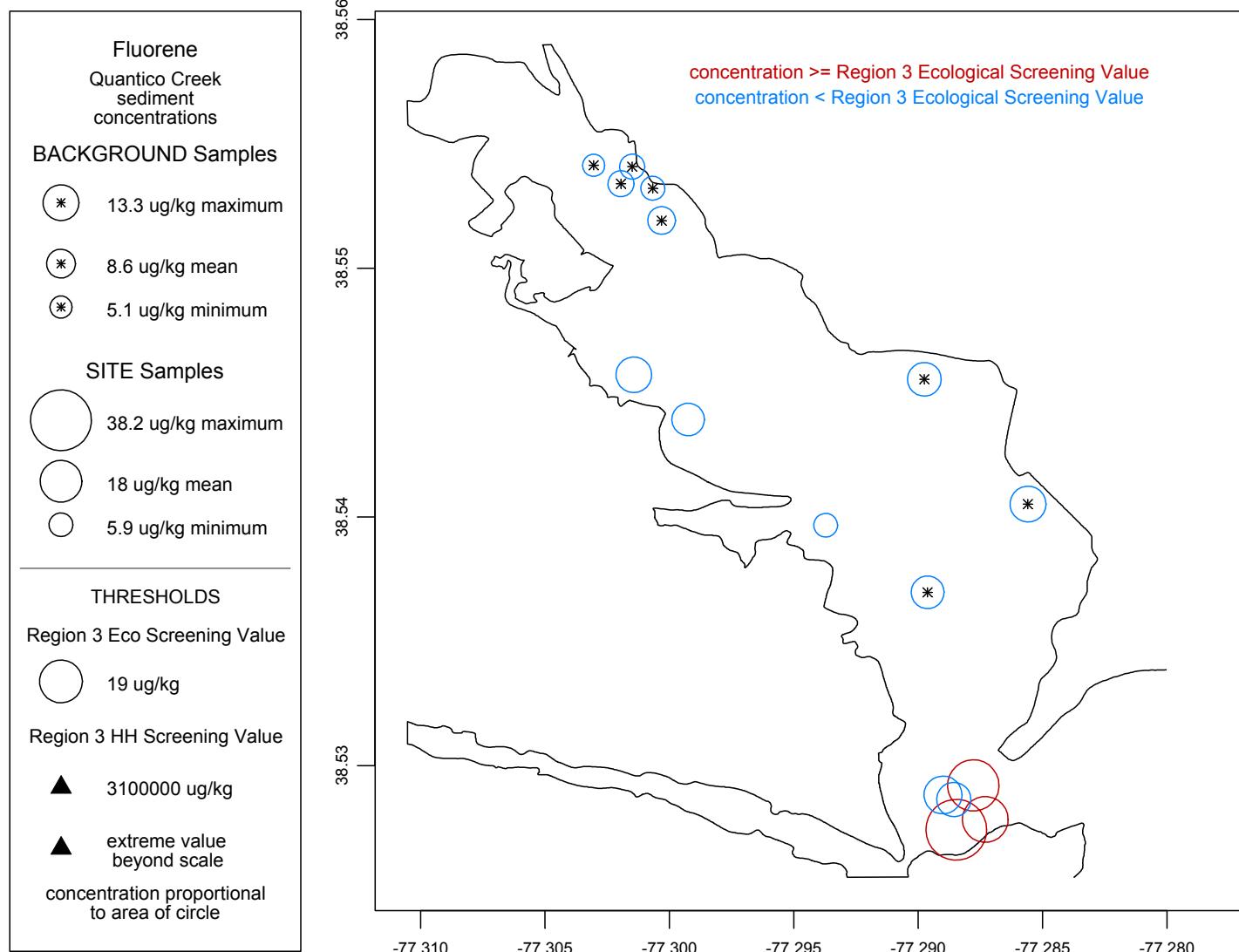


Figure A-31. Bubble Plot of Fluorene Concentrations in Quantico Creek Sediments.

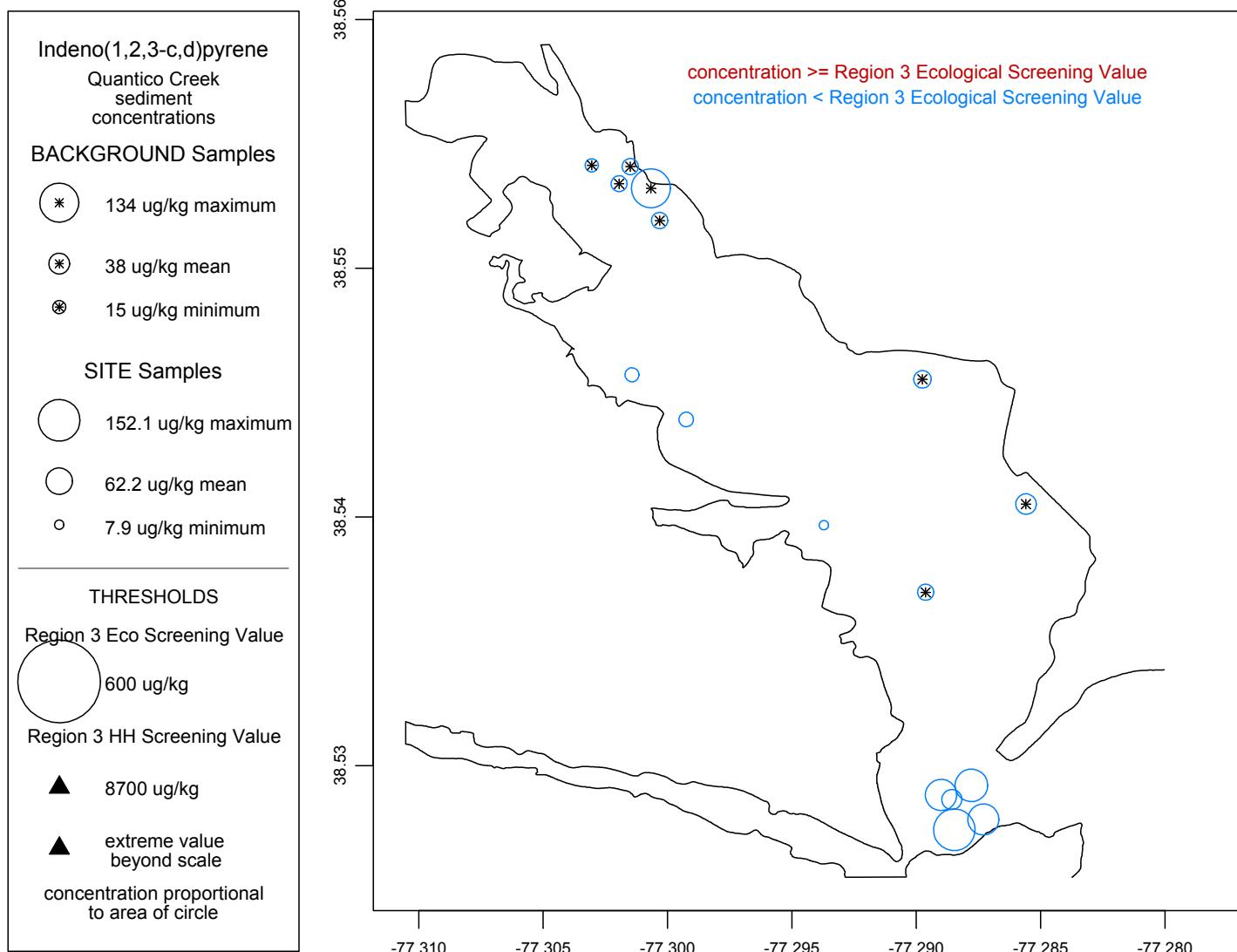


Figure A-32. Bubble Plot of Indeno(1,2,3-cd)pyrene Concentrations in Quantico Creek Sediments.

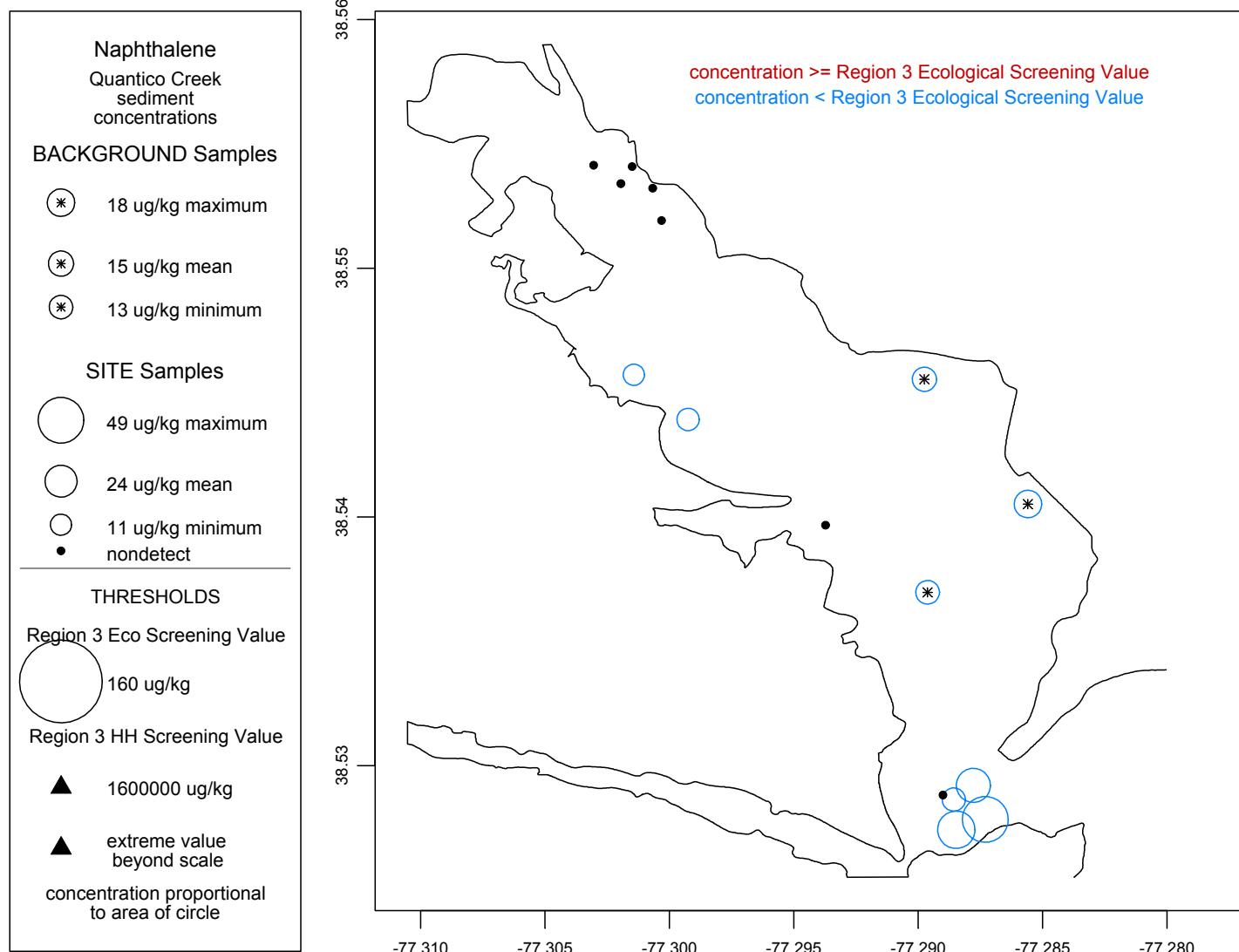


Figure A-33. Bubble Plot of Naphthalene Concentrations in Quantico Creek Sediments.

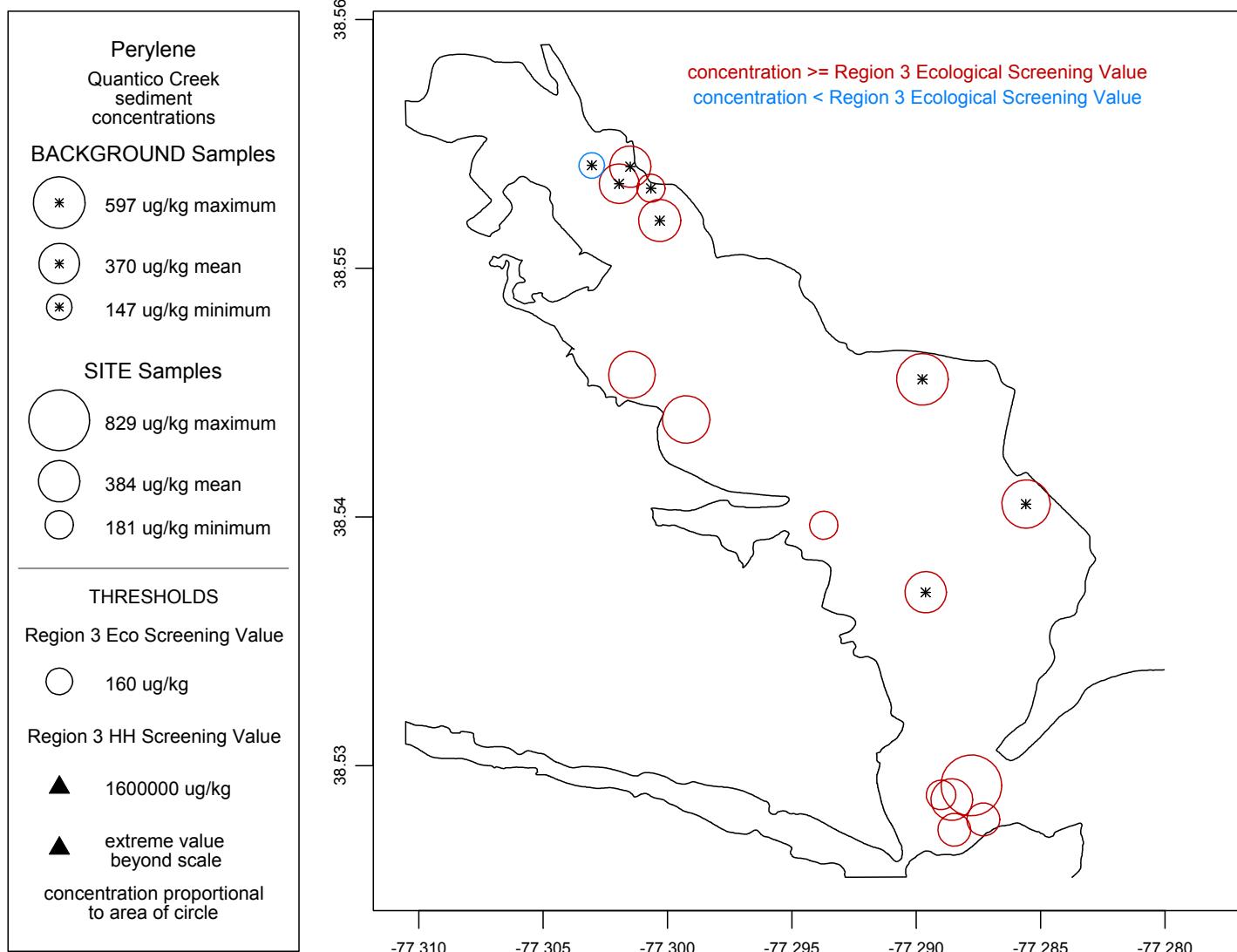


Figure A-34. Bubble Plot of Perylene Concentrations in Quantico Creek Sediments.

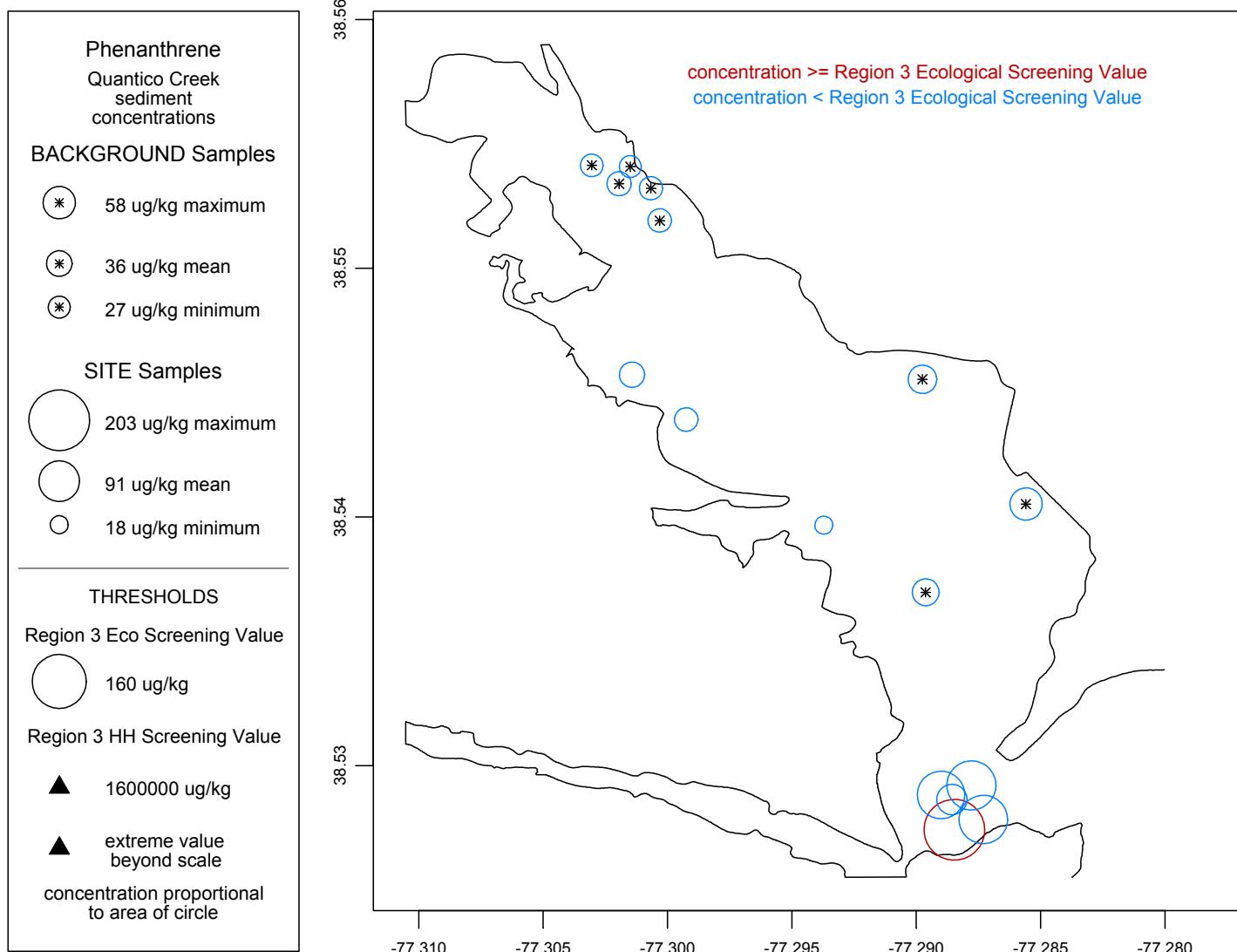


Figure A-35. Bubble Plot of Phenanthrene Concentrations in Quantico Creek Sediments.

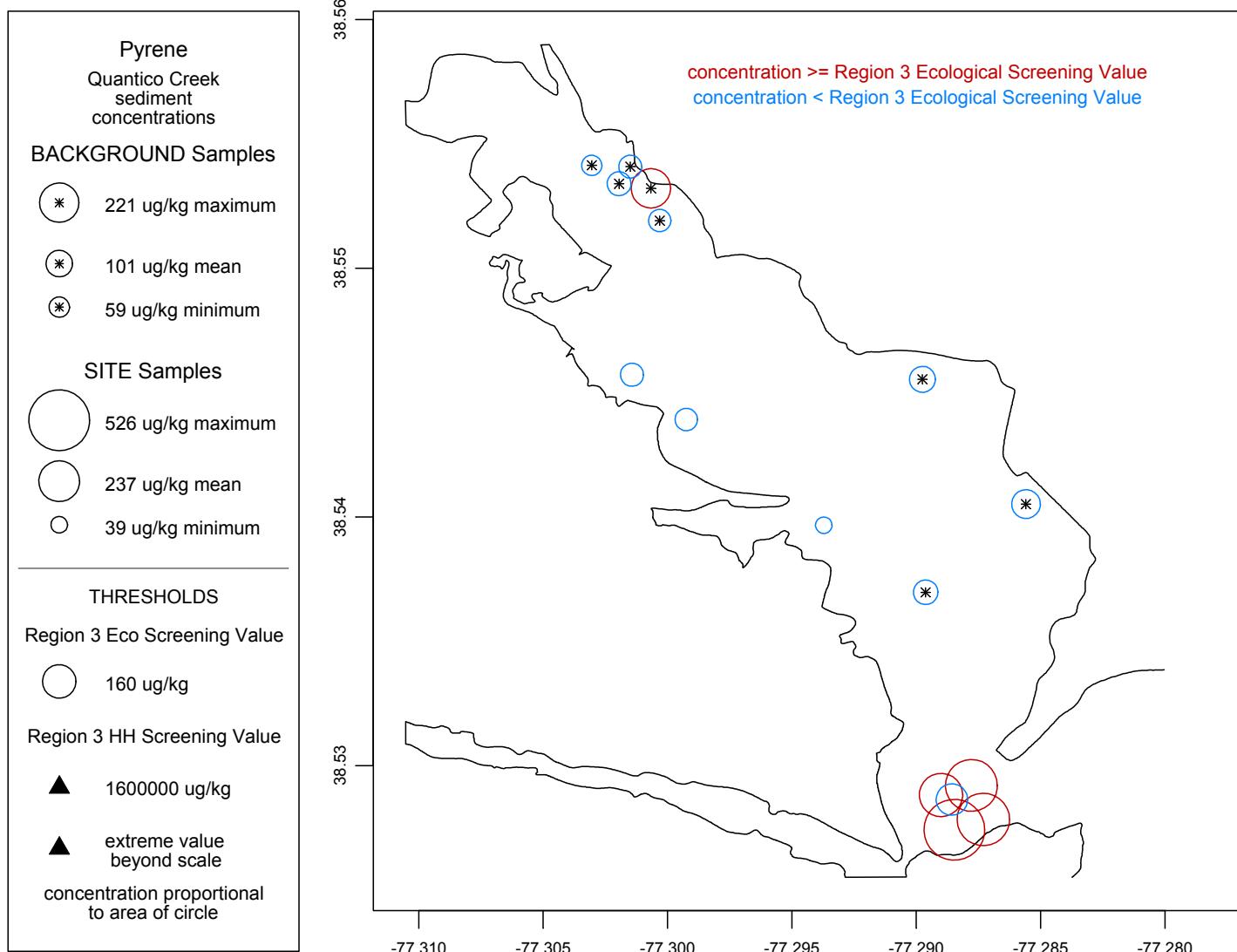


Figure A-36. Bubble Plot of Pyrene Concentrations in Quantico Creek Sediments.

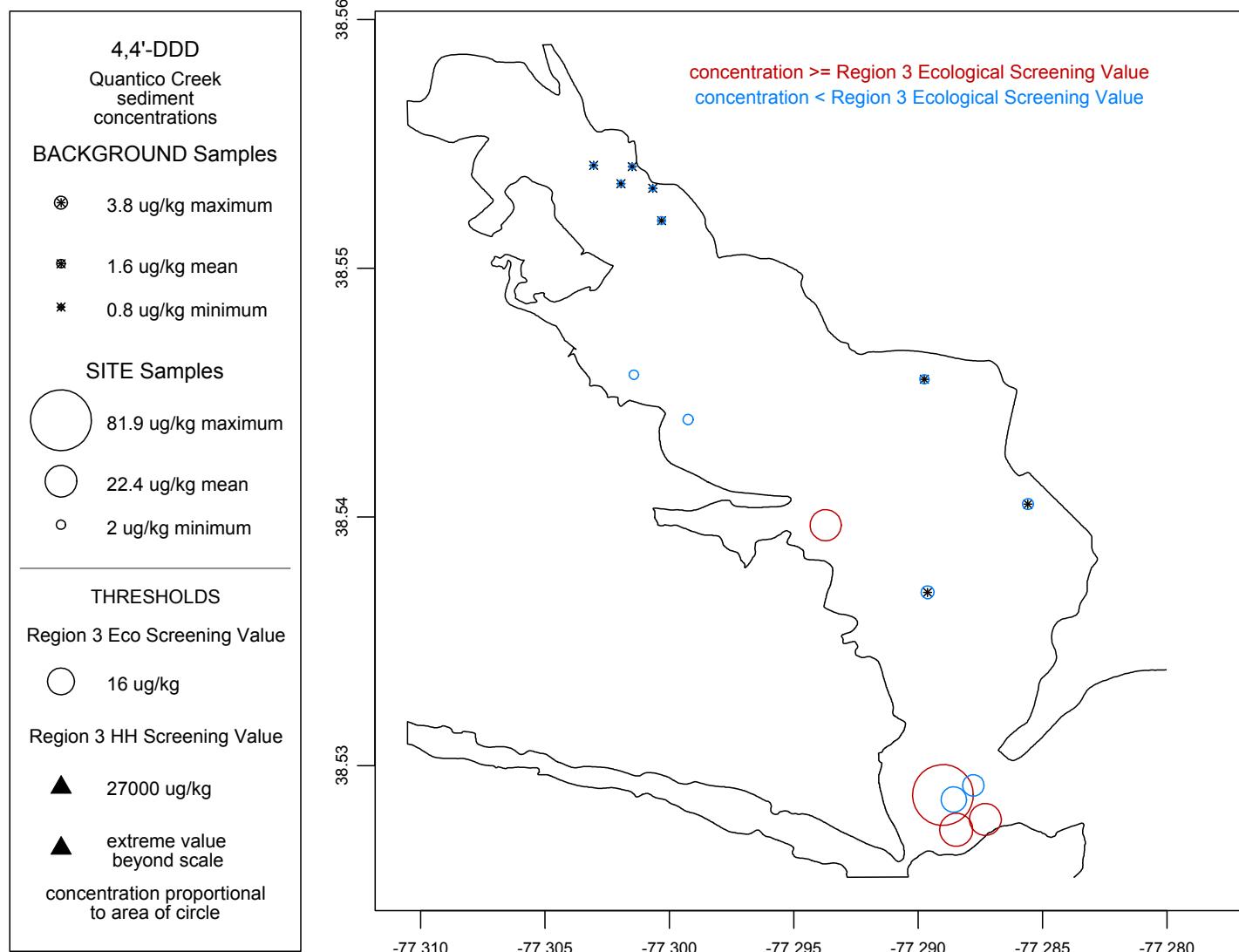


Figure A-37. Bubble Plot of 4,4'-DDD Concentrations in Quantico Creek Sediments.

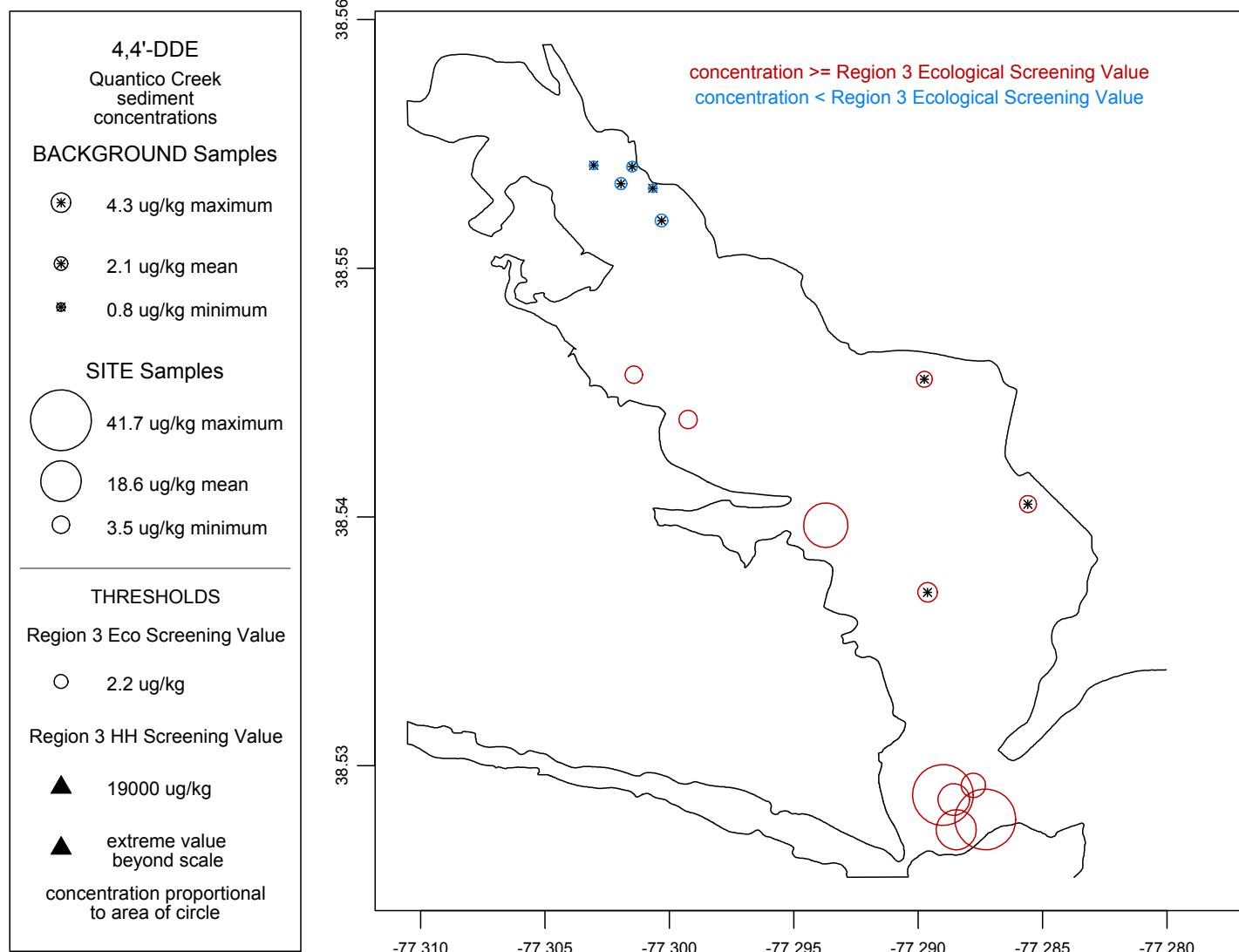


Figure A-38. Bubble Plot of 4,4-DDE Concentrations in Quantico Creek Sediments.

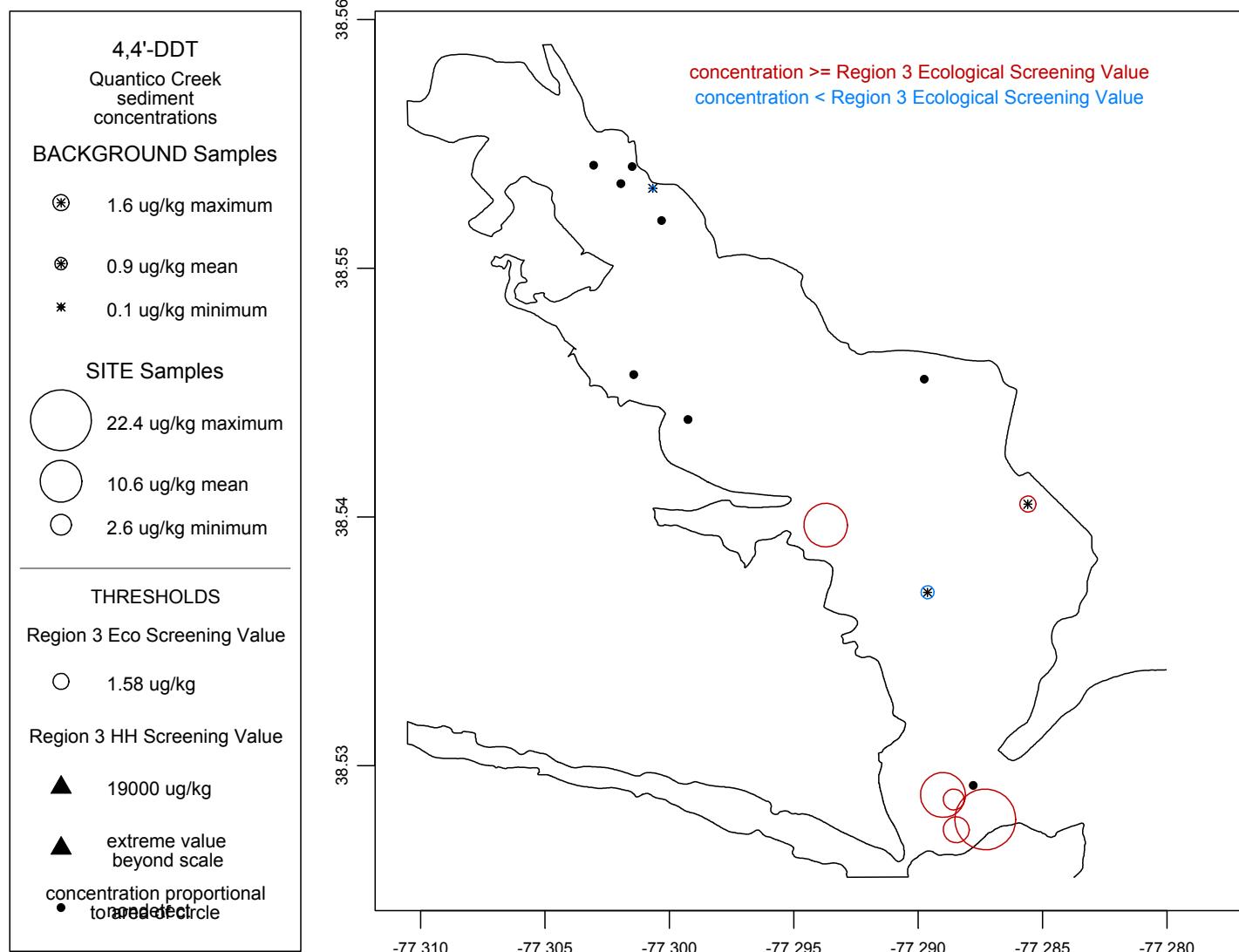


Figure A-39. Bubble Plot of 4,4'-DDT Concentrations in Quantico Creek Sediments.

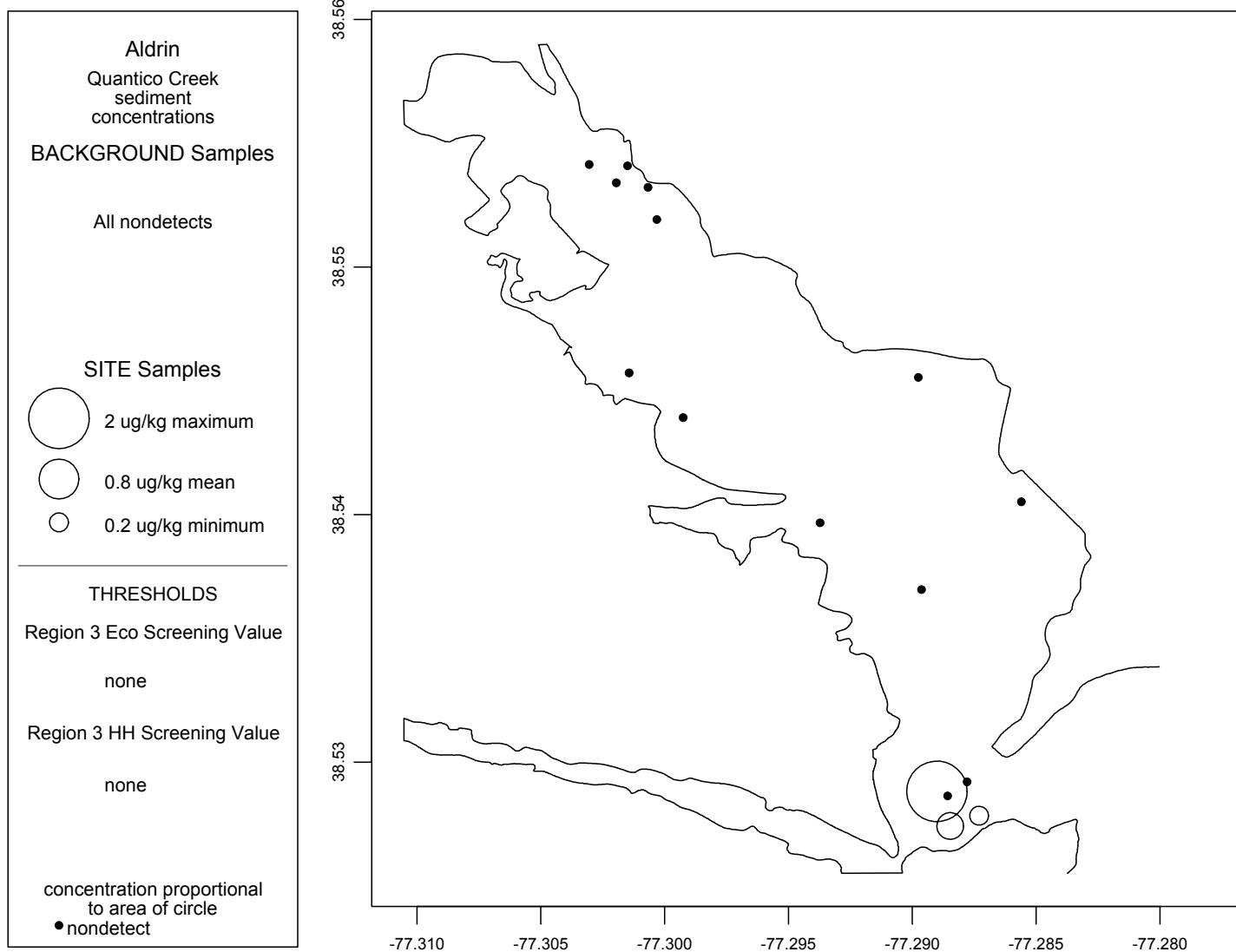


Figure A-40. Bubble Plot of 4,4-DDD Concentrations in Quantico Creek Sediments.

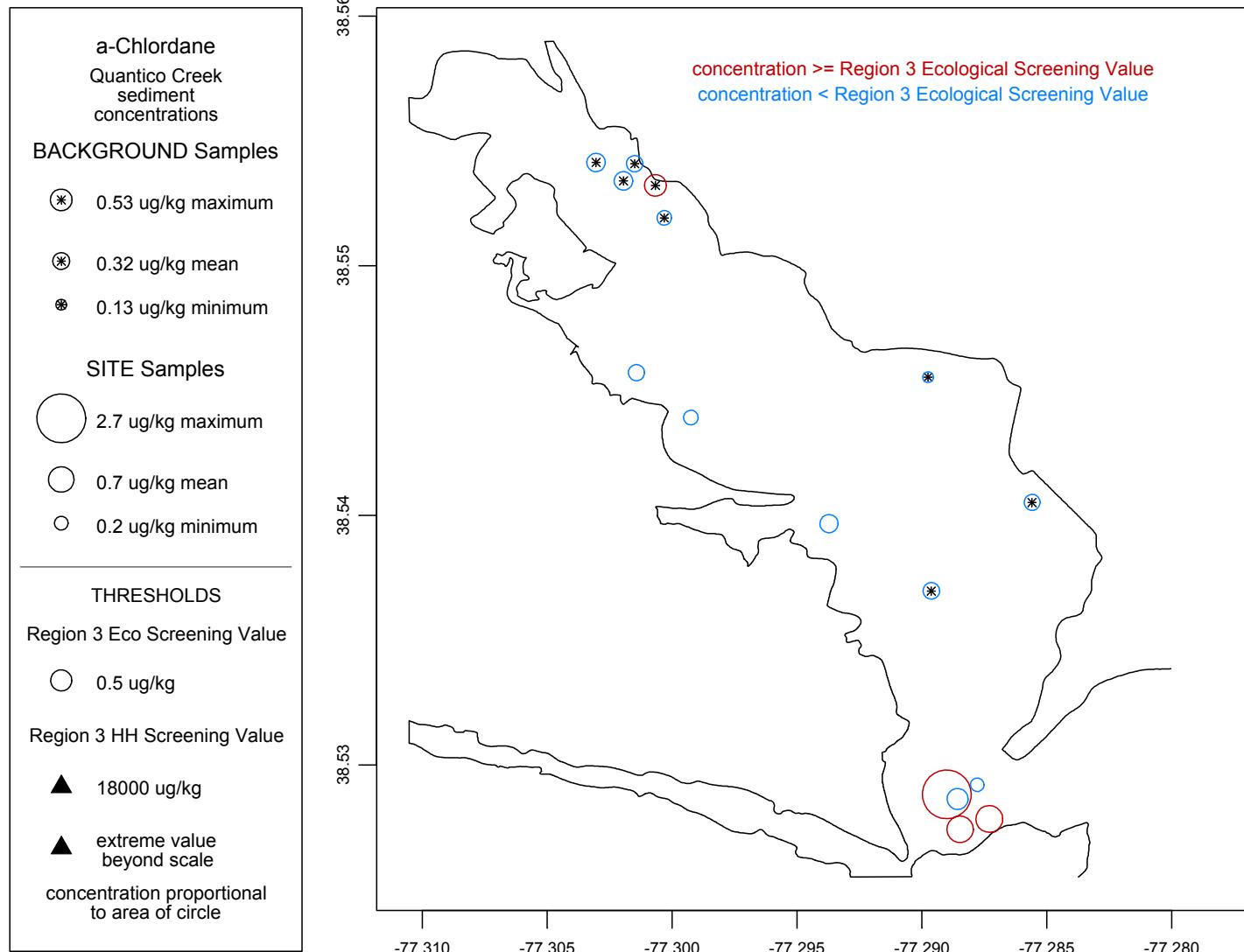


Figure A-41. Bubble Plot of alpha-Chlordane Concentrations in Quantico Creek Sediments.

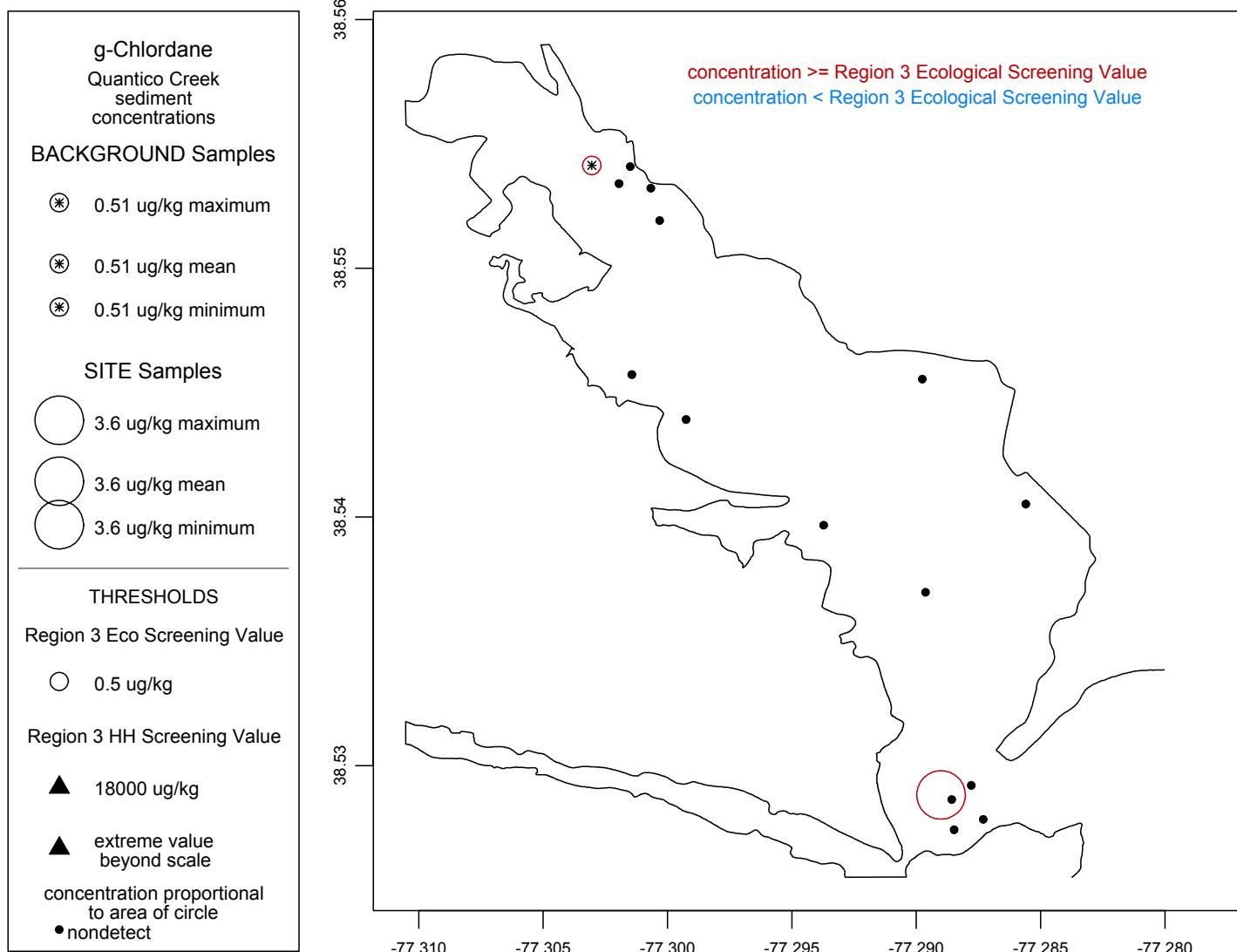


Figure A-42. Bubble Plot of gamma-Chlordane Concentrations in Quantico Creek Sediments.

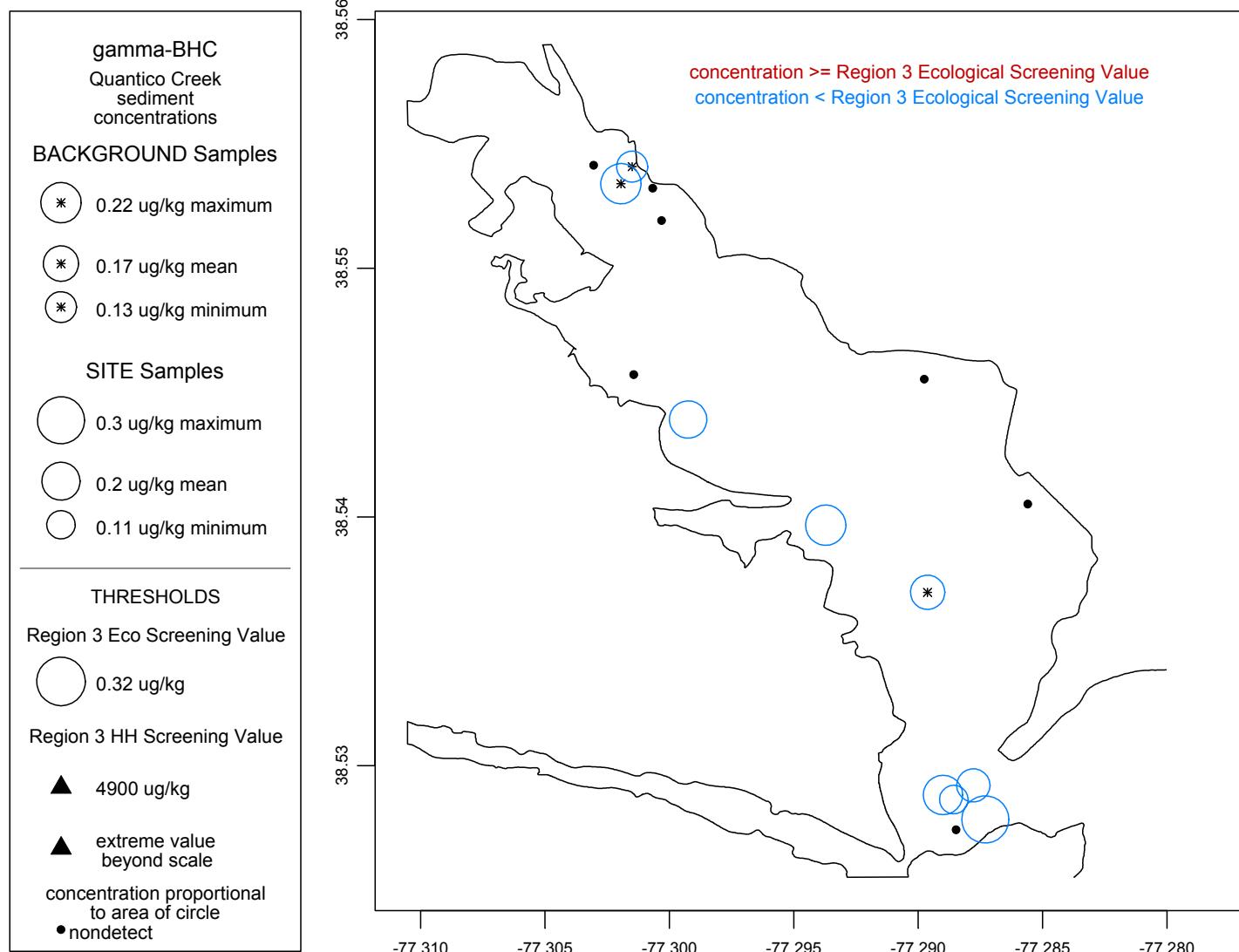


Figure A-43. Bubble Plot of gamma-BHC Concentrations in Quantico Creek Sediments.

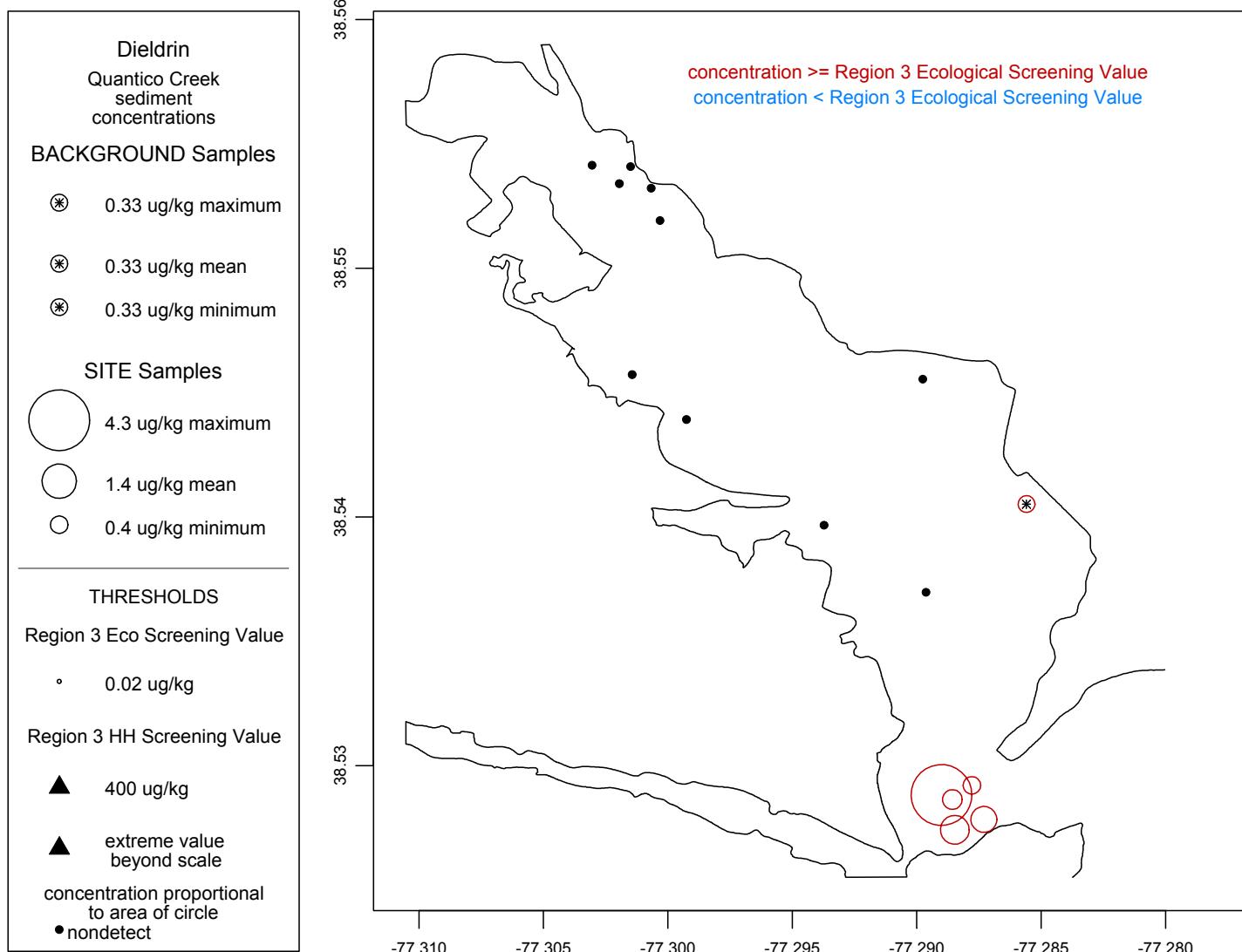


Figure A-44. Bubble Plot of Dieldrin Concentrations in Quantico Creek Sediments.

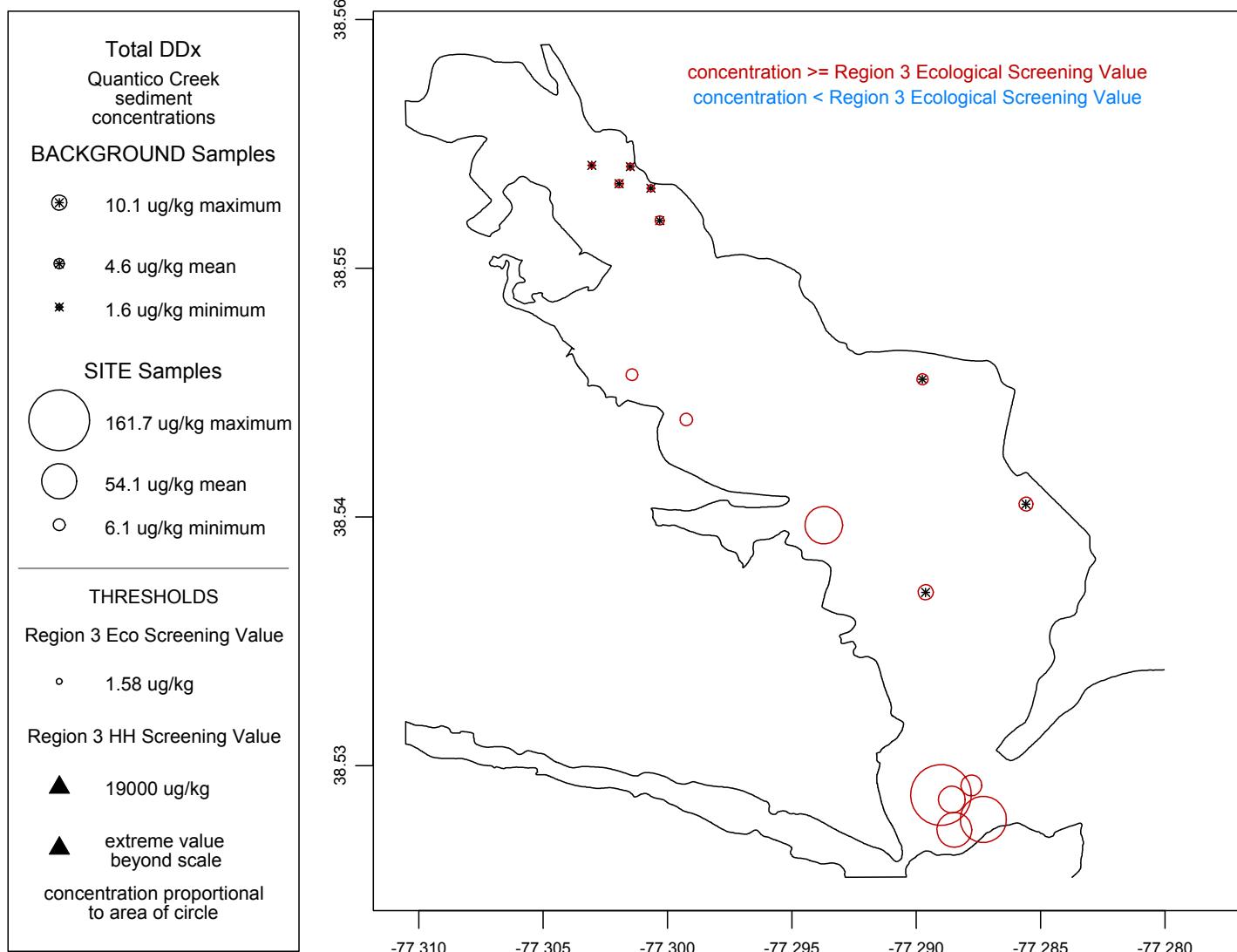


Figure A-45. Bubble Plot of Total DDX (sum of 6 isomers) Concentrations in Quantico Creek Sediments.

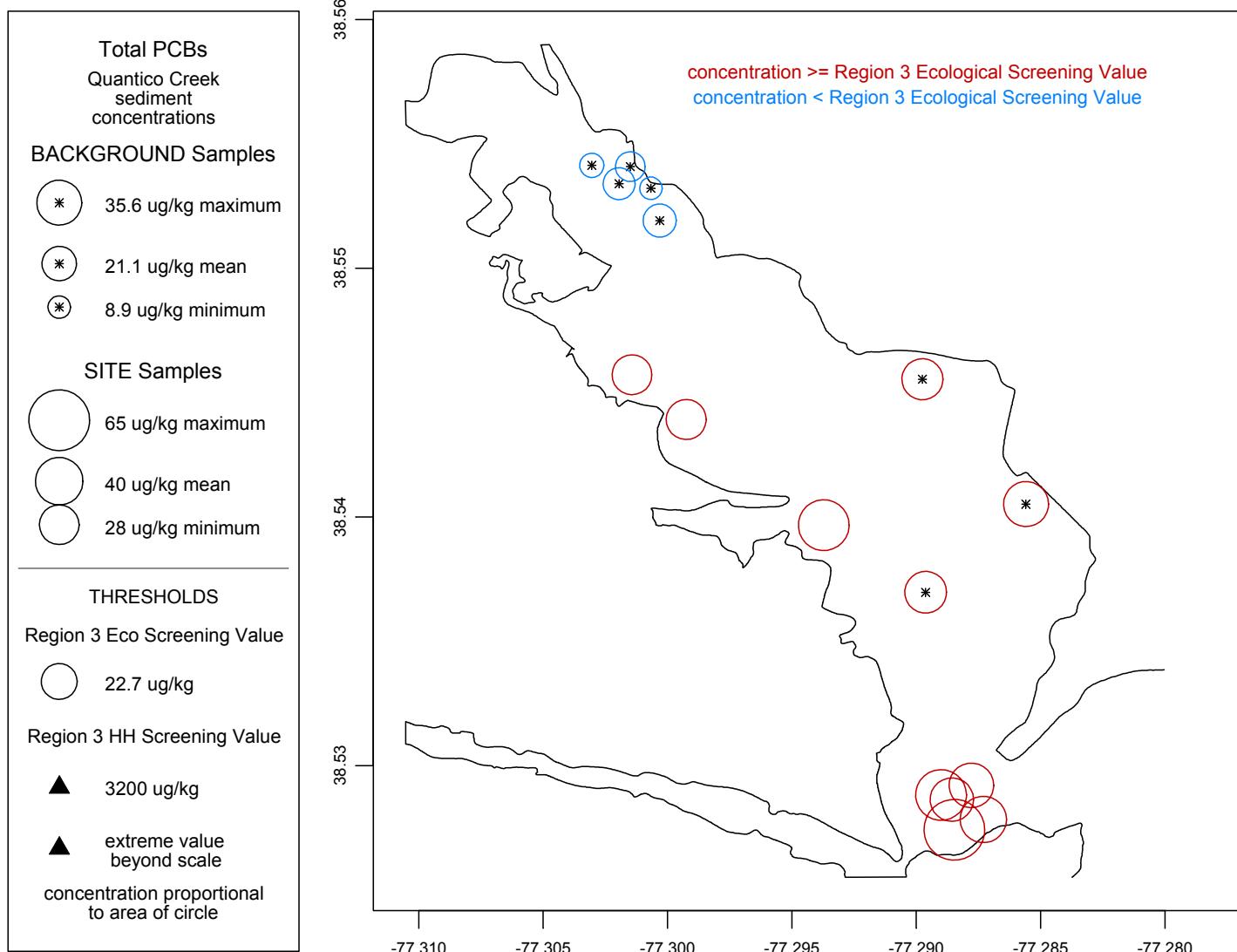


Figure A-46. Bubble Plot of Total PCB Concentrations in Quantico Creek Sediments Total PCB (2 x sum of 18 congeners).